Faculty’s Experiences of Transforming Courses from Face-to-Face to Online Instruction in Teacher Education

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Abstract: Based on growth in online enrollment, many faculty members are required to develop and teach online courses they had previously taught in a traditional, face-to-face classroom. The purpose of this qualitative study was to explore the experiences of eight faculty members at one public university who journeyed through the transformative process by developing and teaching online courses previously taught face-to-face. The methodology for this study was a qualitative framework. Data were collected using a semi-structured interview guide that investigated the transformative process through three stages: planning, implementation, and reflection. Each participant was interviewed in-person for approximately one hour. Data were thematically analyzed using the transformative learning theory by categorizing the data into the 11 phases an adult learner goes through during the process. Each phase was inductively analyzed for patterns, and then the relationships that bound these patterns together were identified and labeled themes.

Introduction

According to Allen and Seaman (2013), the number of students taking at least one online course at institutions of higher education increased by over 570,000 to a new total of 6.7 million during the fall semester of 2011. Based on the growth in online enrollments, many faculty members are asked to develop and teach online courses they had previously taught in a traditional, face-to-face classroom. To successfully transition to an online environment, faculty
members must have technology skills, content knowledge, and sound pedagogy. During the transformative process, several challenges related to the planning and implementing of the online course have been cited in the literature. These challenges include, but are not limited to, having the time it takes to develop and teach an online course (Lewis & Abdul-Hamid, 2006), having the ability to use available technology tools and/or learning management systems to support student learning (De Gagne & Walters, 2009), implementing appropriate pedagogical strategies in the online course (Brinthaupt, Fisher, Raffo, & Woodward, 2011), and adapting to the role of facilitator rather than being the “sage on the stage” (Johnson, 2008). Planning, preparing, and teaching online represents more than a paradigmatic shift in the way faculty work; it is initiating new ways to think about learning. As faculty transform their face-to-face course to online, that process and experience transforms them, too. The purpose of this current study was to investigate faculty’s experiences with transforming courses from face-to-face to online delivery while situating the transformative process in the 11 phases of Jack Mezirow’s Transformative Learning Theory.

**Theoretical Framework**

Jack Mezirow defined learning as “the process of using a prior interpretation to construe a new or a revised interpretation of the meaning of one’s experience to guide future action” (Wiessner & Mezirow, 2000, p. 5). Mezirow labeled this process *transformation*. He began his work in 1978 when he qualitatively investigated women returning to postsecondary study or the workplace after an extended time out. Concluded from this seminal study was that these women went through a personal transformation, and Mezirow identified 10 phases they experienced (Kitchenham, 2008). Over time, Mezirow’s work on adult learning evolved into the Transformative Learning Theory with an additional phase incorporated in 1991. However, it was not until 2003 when he provided a clear definition of his theory:

Transformative learning is learning that transforms problematic frames of reference-sets of fixed assumptions and expectations (habits of mind, meaning perspectives, mindsets)-to make them more inclusive, discriminating, open, reflective, and emotionally able to change. Such frames of reference are better than others because they are more likely to generate beliefs and opinions that will prove more true to guide action. (Mezirow, 2003, pp. 58-59)

Transformative learning is the process of effecting change in a frame of reference. “Frames of reference are the structures of assumptions through which we understand our experiences. They selectively shape and delimit expectations, perceptions, cognition, and feelings (Mezirow, 1997, p. 5). As stated above, transformative learning is an 11 phase process with four main components (Mezirow, 2007): experience, critical reflection, reflective discourse, and action. To begin, the adult learner has an experience. The learner then critically reflects; examines their own beliefs, goals, assumptions etc. in relation to the experience. The learner proceeds to take part in dialogue further examining new thoughts and ideas that have come out of the critical reflection. This dialogue consists of gathering opinions of others, whether through one-on-one conversations or with a group setting. The final step is taking action based on this new level of learning and perspective.

The Transformative Learning Theory was the theoretical framework for this current...
Faculty’s experiences of transforming a course from face-to-face to online were investigated using this theory’s 11 phases. In Table 1 each phase is presented and operationalized for the context of this study.

Table 1

<table>
<thead>
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<th>Phases of Transformative Learning Theory and Guiding Questions</th>
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<tr>
<td><strong>Phases</strong></td>
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<td>1. A disorienting dilemma</td>
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<td>2. A self-examination with feelings of guilt or shame</td>
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<td>3. A critical assessment of epistemic, sociocultural, or psychic assumptions</td>
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<td>4. Recognition that one’s discontent and the process of transformation are shared and that others have negotiated a similar change</td>
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<td>5. Exploration of options for new roles, relationships, and actions</td>
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<td>6. Planning a course of action</td>
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<td>8. Provisional trying of new roles</td>
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<td>9. Renegotiating relationships and negotiating new relationships (critical self-reflection)</td>
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<td>10. Building competence and self-confidence in new roles and relationships</td>
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<td>11. A reintegration into one’s life on the basis of conditions dictated by one’s perspective</td>
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Method
The purpose of this qualitative study was to examine the transformative process of faculty from one public university in the midwestern United States who developed and taught an online course they had previously taught in a traditional, face-to-face classroom. Eight participants, who met the criteria of having developed and taught an online course they had previously taught in a face-to-face course format within the last three years, were chosen to participate in the study. All eight participants were faculty who taught in a college of education and human development. For the majority of faculty, teaching an online course was a relatively new endeavor, taking place between one to six years previously. Of the eight faculty, three had developed and taught one online course, two had developed and taught two online courses, one had taught three online courses, and two had taught seven or more online courses. In reference to this study, all faculty interviewed developed and taught graduate level courses.

The research was conducted with the approval of the University’s institutional review board (#IRB-201404-426). Each interview transcript was assigned a code to maintain confidentiality. An interview guide (Kvale & Brinkmann, 2009) consisting of five closed-ended questions about demographics and 11 open-ended questions about planning, implementation, and reflection was developed and used by the researchers. Interviews were conducted in person by one of the two researchers and ranged in length from 45 to 75 minutes.

Prior to analysis of the interview data, a framework schema was constructed that identified the 11 phases of Mezirow’s Transformative Learning Theory with corresponding operational definitions that were derived from the literature and agreed upon by the researchers (see Table 1). An inductive process was used to examine the transcripts of the eight participant interviews. After each researcher independently coded the interview transcripts using the Transformative Learning Theory framework schema, the coded data were integrated into one document for inter-coding agreement by the two researchers. Any data that did not clearly fit within the specified Phase, were either moved to a more appropriate Phase or discarded. After agreement of data placement within the framework schema was conducted, the researchers independently analyzed the data within each phase for patterns. Together, the researchers compared the patterns and developed themes for each phase (see Table 2).

Table 2

<table>
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<tr>
<th>Phases</th>
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<td>1. A disorienting dilemma</td>
<td>Courses were transformed because it was a departmental expectation rather than a personal choice.</td>
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<td>Course transformation took a significant amount of time, but compensation for this extra time was inconsistent.</td>
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<td>2. A self-examination with feelings of guilt or shame</td>
<td>Technology skills needed developing.</td>
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3. A critical assessment of epistemic, sociocultural, or psychic assumptions

Faculty assumed the same level of quality could not be achieved with online instruction. Pedagogical knowledge was critical with online teaching. Not all instructors nor courses are suited for online delivery.

4. Recognition that one’s discontent and the process of transformation are shared and that others have negotiated a similar change

To negotiate their presuppositions, faculty had philosophical, broad-based discussions with instructional designers and faculty who were already teaching online.

5. Exploration of options for new roles, relationships, and actions

Faculty’s dialogue with instructional designers and peers became more specific and skill-based. Pedagogy led the exploration for quality assurance, which was influential on the selection of technology.

6. Planning of a course of action

Faculty used their previously taught face-to-face course as their conceptual framework for the online transformation, as it was pedagogically sound.

7. Acquisition of knowledge and skills for implementing one’s plans

Faculty did not receive formal online course development training. Faculty sought pedagogical and emotional support from colleagues.

8. Provisional trying of new roles

Faculty’s role shifted from the “sage on the stage” to the “guide on the side.” Faculty included similar face-to-face instructional strategies in their online courses.

9. Renegotiating relationships and negotiating new relationships (critical-reflection)

Faculty who taught synchronously suggested online did not require a different type of instruction; whereas faculty who taught asynchronously felt differently. Some faculty noted feeling disconnected from students. Although most faculty liked teaching online, there were elements of face-to-face instruction that could not be replicated.

10. Building competence and self-confidence in new role and relationships

Faculty became more proficient at using technology.
As a result of online teaching, faculty increased their confidence and believed they became better instructors in their face-to-face courses.

Faculty were satisfied with their courses after the transformation, yet had goals for improvement.

Most faculty were surprised they liked teaching online and were willing to do it again.

Boundaries were less defined in an online class, making them essential to establish.

Results

Phase 1: A Disorientating Dilemma

Theme 1: Courses were transformed because it was a departmental expectation rather than a personal choice. For most faculty, their courses had to be transformed for online delivery because they were part of a graduate, distant degree program. One member of the faculty admitted he initially did not want to do it, yet no participant directly challenged this expectation. Notably, one faculty member came to the university for the opportunity to acquire online teaching experience.

Theme 2: Course transformation took a significant amount of time, but compensation for this extra time was inconsistent. Faculty were in agreement they spent ample time transforming their courses. Most faculty were simultaneously developing and teaching the course. One documented spending an average of 30 hours per week. However, none of the faculty were given release time for course development, but some received payment. For those who were fortunate to receive payment, the range of compensation was $500 to $3000.

Phase 2: A Self-Examination with Feelings of Guilt or Shame

Theme 1: Technology skills needed developing. None of the faculty reported specific feelings of shame nor guilt on the outset of the transformation process. What emerged as a barrier was their lack of technology skills. When faculty were asked to rate their skills prior to teaching online, they had a mean of 3.8 (based on a Likert scale of 1 to 10). For some faculty, they did not utilize Blackboard® (online course management system) for their face-to-face courses, even though it was a university expectation.

Phase 3: A Critical Assessment of Epistemic, Sociocultural, or Psychic Assumptions

Theme 1: Faculty assumed the same level of quality could not be achieved with online instruction. What was most concerning for faculty was how a sense of community could be built. “Isolating” was used to describe online learning. They assumed interaction among
students would be limited, as would their interactions with students. Ultimately, limited interaction would affect learning outcomes.

**Theme 2: Pedagogical knowledge was critical with online teaching.** Faculty in this study were from a college of education and were pedagogical experts. Their presupposition was that technology would guide the transformative process, rather than pedagogy. Consequently, if technology guided the content rather than pedagogy, the teaching and learning process would be compromised.

**Theme 3: Not all instructors nor courses are suited for online delivery.** Some faculty assumed that instructors who were not good teachers in the face-to-face environment, would be even worse teachers in the online environment. It was believed that online teaching needed to be intentional and explicit. Beyond this, some faculty noted graduate students are better suited for online learning than those who are undergraduates.

**Phase 4: Recognition that One’s Discontent and the Process of Transformation are Shared and that Others have Negotiated a Similar Change**

**Theme 1: To negotiate their presuppositions, faculty had philosophical, broad-based discussions with instructional designers and faculty who were already teaching online.** The university’s instructional technology center hired instructional designers to assist faculty with course conceptualization and technological skills. Faculty sought them out, along with their departmental peers, to investigate presuppositions and to explore ways of transforming their courses.

**Phase 5: Exploration of Options for New Roles, Relationships, and Actions**

**Theme 1: Faculty’s dialogue with instructional designers and peers became more specific and skill-based.** Through professional discourse with other faculty and instructional designers, faculty’s presuppositions became disconfirmed. Thus, dialogue shifted from negotiation of presuppositions to acquisition of skills.

**Theme 2: Pedagogy led the exploration for quality assurance, which was influential on the selection of technology.** Most faculty held individualized training sessions with instructional designers and departmental peers. At the forefront of these sessions was how technology would support pedagogical strategies, rather than how pedagogy would be adjusted to the technology. For example, one instructor chose to use Second Life® (3D virtual world) because of how it supported her pedagogical strategy of building a community.

**Phase 6: Planning a Course of Action**

**Theme 1: Faculty used their previously taught face-to-face course as their conceptual framework for the online transformation, as it was pedagogically sound.** Because faculty considered themselves pedagogical experts, they believed their original, face-to-face course was of quality, thus these courses were their frames of reference. This established pedagogy led the
decision-making throughout the transformative process, not the technology, mainly because learner outcomes remained constant across the two delivery methods.

Phase 7: Acquisition of Knowledge and Skills for Implementing One’s Plans

Theme 1: Faculty did not receive formal online course development training. While some attended workshops, all preferred working one-on-one with instructional designers to learn how to effectively use technology to support pedagogy and/or to troubleshoot technology problems.

Theme 2: Faculty sought pedagogical and emotional support from colleagues. While, technology questions were directed at instructional designers, faculty established an informal support system with colleagues to discuss instructional strategies and assessments and to share their emotional highs and lows throughout their journey of transformation.

Phase 8: Provisional Trying of New Roles

Theme 1: Faculty’s role shifted from the “sage on the stage” to the “guide on the side.” Almost all faculty noted a transformation in their role; they shifted from being the leader to the facilitator. While some felt comfortable in their new role because students took more responsibility for their learning, others felt “sidelined” and like the “silent partner.”

Theme 2: Faculty included similar face-to-face instructional strategies in their online courses. To support these instructional strategies, each faculty member used a variety of technological tools. However, adjustments needed to be made in order to fit the online environment. Examples of adjustments included: replaced DVDs with online videos, reduced number of “in class” activities.

Phase 9: Renegotiating Relationships and Negotiating New Relationships/Self-Reflection

Theme 1: Faculty who taught synchronously suggested online did not require a different type of instruction, whereas faculty who taught asynchronously felt differently. Student interaction and discussion were more easily maintained in synchronous courses; so for faculty whose courses were discussion-based, this type of instruction most replicated face-to-face. For faculty who taught asynchronously, they had to become much more detailed and explicit in their instruction, as well as intentional about interaction.

Theme 2: Some faculty noted feeling disconnected from students. Faculty described this feeling in the following ways: “Felt like the silent partner, not the competent other,” “Outside looking in,” “I feel disempowered and disconnected,” and “I need to communicate face-to-face.” These faculty expressed a commitment to both understand this disconnection and to find ways to connect with students.

Theme 3: Although most faculty liked teaching online, there were elements of face-to-face instruction that could not be replicated. For some, the face-to-face environment still felt more “natural” because discussion was generated more abundantly; students were not able to
“hide behind the technology.” Additionally, they could better “feel the pulse of the class” for understanding.

**Phase 10: Building Competence and Self-Confidence in New Roles and Relationships**

*Theme 1: Faculty became more proficient using technology.* On a scale of 1 to 10, faculty rated their technological skills prior to teaching online as 3.8 (M) and after teaching online as 6.3 (M).

*Theme 2: As a result of online teaching, faculty increased their confidence and believed they became better instructors in their face-to-face courses.* Faculty stated they became detailed, explicit, and organized. They also incorporated more technology, mainly Blackboard®

*Theme 3: Faculty were satisfied with their courses after the transformation, yet had goals for improvement.* Faculty identified a feeling of accomplishment (e.g., “I did it!”). One even suggested being a model for other faculty when they go through the transformative process. Although satisfied, faculty’s future aspirations were on the horizon. They had goals to increase interaction, incorporate more activities, increase the amount of detail, and become more connected to students.

**Phase 11: A Reintegration into One’s Life on the Basis of Conditions Dictated by One’s Perspective**

*Theme 1: Most faculty were surprised they liked teaching online and were willing to do it again.* Some faculty liked how they learned to “let go” due to having less control and “go with the flow” when an idea or technology did not work. One faculty illustrated how she learned so much about herself because she was “pushed” to find different ways to teach. For another, “class time” became more application-based rather than a review of the required reading.

*Theme 2: Boundaries were less defined in an online class, making them essential to establish.* The main boundary that needed to be established was when faculty would be (and not be) available to students. This was specifically targeted toward managing email, because “24/7” was neither realistic nor healthy.

**Discussion**

When planning, faculty spent ample time with an instructional designer learning the technologies to support their self-identified pedagogy, thus compensation for course development was perceived as necessary. While all faculty agreed that developing a course was more time intensive, none of them were given release time in any form to plan and design their course, only monetary compensation. Compensation for development was perceived as necessary, yet there was an inequitable monetary compensation structure within the college, as well as no evidence of additional compensatory mechanisms, such as a course release or reduction in service expectations.
The majority of time faculty spent planning was with an instructional designer selecting and learning technologies to support pedagogy. Only one faculty member worked in a department that invested in a full-time director of distant education position. The others were solely reliant on the university’s center for instructional and learning technologies. This center was the only formal support structure for faculty with a focus on teaching them to independently navigate technology, consequently faculty were expected to become both content and technology experts. Beyond this, faculty had to invest time creating all frameworks to situate their content for presentation (e.g., wikis, Powerpoints). None of the faculty even suggested clerical support. Moreover, faculty had to informally solicit pedagogical consultations from peers due to their departments, college, nor university providing a more formalized service.

Faculty acceptance of online education is consistently cited as a significant barrier (Allen & Seaman, 2007), with many being hesitant due to lack of support, assistance, and training (Allen & Seaman, 2008). In this study, all but one faculty member transformed their course because it was a required course in a distant degree program, consequently making the transformation a requirement. Comparatively, Mill, Yanes, and Casebeer (2009) also conducted a qualitative study of faculty perceptions in a college of education. One of the findings was that administrative support was lacking both with infrastructure and compensation.

De Gagne and Walters (2009) did a qualitative metasynthesis of the online teaching experience across nine studies involving 203 participants. All of the studies documented work intensity with planning, designing, delivering, and evaluating online instruction, thus increasing faculty workload. “The process of designing and planning online courses is usually more time-consuming because instructors must create a more explicit and transparent course in an electronic format, which requires more deliberation in designing the process, structure, and evaluation, along with the interaction components of the course” (Anderson, Rourke, Garrison, & Archer, 2001; De Gagne & Walters, 2009). Results from their study suggested faculty need to be provided with continuous support that includes appropriate technology, ongoing training, and technical assistance, while administrators must evaluate faculty workloads.

While implementing their online course, faculty’s conceptual framework was their prior face-to-face course; interestingly, for those who delivered it synchronously, online did not require different instructional tools like it did asynchronously. Intriguingly, the professional literature suggested online not only needs different instructional and technical tools (Ray, 2009), but also a different type of pedagogy (Bates & Watson, 2008). The opposing viewpoint is that the pedagogical strategies remain intact during the transformative process, it is the medium and instructional tools that change. To illustrate, modeling is a well-accepted pedagogical strategy that went from a live demonstration in a face-to-face class to a recorded demonstration in the online class. In the current study, faculty reported how course objectives and accreditation accountability were not altered per learning format; pedagogy remained for quality assurance. This was confirmed with the findings in Johnson’s 2008 study in that “the conceptual framework, program outcomes, and student learning objectives do not change in web-based education. Students can acquire and synthesize new knowledge in this environment much as they do in a face-to-face classroom.”

For those who taught synchronously, their instructional styles were comparable to face-to-face in how students both participated in and lead class discussions/presentations. Faculty denoted minor alterations, such as a reduction in lecture time. For faculty who delivered their courses asynchronously, they also retained their conceptual, pedagogical framework from face-to-face but had to use different mediums/instructional tools for presentation of content and for
student interaction. For these reasons, a face-to-face classroom experience is difficult to replicate in the online environment without adjustments (Ray, 2009).

Keengwe and Kidd (2010) wrote, “…it is critical for faculty to not only strive to learn the technologies associated with online learning, but also understand the need to fundamentally change and transform their pedagogical approach” (p. 6). Faculty in current study were considered pedagogical experts for which their pedagogical foundation remained stable during the transformative process. Arguably, should the rudimentary principles of what constitutes quality teaching and learning be changed in the online environment? Online, web-based instruction changes the delivery not the art of teaching; undoubtedly, educators have a responsibility to uphold these traditional, educational principles (Johnson, 2008).

Upon reflection, faculty postulated that online teaching made them more efficient and effective teachers, even with their role shifting to facilitator. Because this study was situated in a college of education, most faculty were already pedagogical experts, yet online teaching further advanced their skills. They used more explicit instruction for clarity, enhanced content with new instructional tools/aids, and became more intentional about social interaction. Faculty in Johnson’s 2008 study illustrated how they were able to transfer newly learned web-based teaching strategies to the face-to-face classroom.

When teaching online, faculty find themselves in the role of learning facilitator rather than lecturer/teacher, and this change is one many faculty find themselves unprepared (Vaill & Testori, 2012). In the current study, the shift to facilitator was embraced by most, but uncomfortable for a few. Students taking responsibility for their learning is an expectation of most faculty, yet how that responsibility is operationalized varies from taking leadership roles in content presentation to taking responsibility for studying content presented by the instructor. Based on De Gagne and Walters’ 2009 qualitative metasynthesis, one of the most significant transformations was from lecturer to guide from knowledge dispenser to resource provider, and from authority to facilitator. Reflected by the recipient of the 2003 Sloan-C award for Excellence in Online Teaching, Bill Pelz, “…my ever-emerging philosophy of education increasingly diminishes the role of ‘the teacher’ in the teaching/learning equation. It took over 30 years of college teaching experience for me to realize that the learner is, for the most part, in charge of what gets learned.”

There was also growth in the affective domain of learning. Some faculty were able to “let go” (or at least “push the boundaries of control”) of the variables in online learning they could not control. Others noted a reduction in anxiety after conquering the mysterious world of online teaching. De Gagne and Walters (2009) reported that many faculty perceived online teaching to be stimulating and satisfying. This perception was shared by some participants in the current study.

References


Title page

a. **Title of submission:** Issues of Online Distance Education: Learning Motivation of Current and Prospective School Teachers

b. **Topic area of the submission:** Educational Psychology, Distance Education

c. **Presentation format:** Paper Session

d. **Description of Presentation:** The criteria for recognizing three basic categories of online students – unmotivated, motivated, and overmotivated – will be discussed. The study participants’ individual and collective data will be represented on the 100-score scale designed. Analysis of the investigated population of students, who were current and prospective school teachers, from the point of view of their learning motivation will be performed and illustrated by graphs and pictures.

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Issues of Online Distance Education: Learning Motivation of Current and Prospective School Teachers

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Abstract

In this work, LM in three categories of students – motivated, unmotivated and overmotivated – was explored. Fifty graduate students, which were current and prospective school teachers and took the author’s online psychology courses in 2012-2013, participated in the study. The research methodology included developing the rules of coding students’ course work, designing the 100-scale of LM for representing their individual as well as collective data, and collecting info about students’ academic achievement in this course. According to the results, students’ LM has two co-existing components – pragmatic (grade-oriented) and cognitive (knowledge-oriented). Three mentioned categories of students differ in quantity as well as quality of their LM. Further analysis showed that a) motivated students constituted a majority 74% of the population; they were rather pragmatically than cognitively oriented learners, b) unmotivated (problem) students, whose even pragmatic motivation was very low, represented 18.5% of the population, and c) overmotivated (enthusiastic) individuals that is, curious, and eager to get knowledge without being encouraged or rewarded, constituted the smallest part 7.5% of the total population. Considering these results in a wider socio-cultural context, the author suggests that prevalence of pragmatically motivated students among current and prospective school teachers, the shortage of enthusiastic learners and growth of problem learners can be possible significant causes affecting quality of the modern US primary school education.

Keywords: learning motivation, pragmatic (grade-oriented) vs. cognitive (knowledge-oriented) motivation, problem students, enthusiastic learners, current/prospective school teachers

Introduction

Beginning in the early 1990’s in the American educational periodicals and on educational forums in the electronic networks, specialists have been actively discussing failures of national primary school education. Conducting the cross-cultural research, scholars have repeatedly stated the American school students’ poor preparation in natural disciplines, especially, math (Stigler & Hiebert, 1999). In the recent years, there appeared articles about school students’ underachievement in other subjects as well (Hood, 1993; Albada, 2010; Report: Half of U.S. Schools Fail Federal Standards, 2011; Crotty, 2012; Khazan, 2012). The administration is taking various measures to address the present situation; one of them involves dismissing of “the bad school teachers”, namely those that are incompetent and lack motivation (Meador, 2014; Most Americans Want Easier Way to Fire Bad Teachers; 2010).

Indifferent and careless school teachers cause much harm to the society. Remarkably, a lack of motivation may display itself long before individuals come to school settings to teach – in their students’ years. They learn to become educators the same way they eventually will work as
educators. That’s why we made an attempt to study learning motivation (LM) in students who are current and prospective school teachers.

**Theoretical Frame: the Concept of Learning Motivation and its Study**

The phenomenon of LM has been explored in modern psychology and educational practice since the beginning of the last century. However, there is no agreement in how it should be termed. Often the concept of *interest* is used to describe a stimulating role of motivation in learning (Krapp, 1999). LM is also defined as a factor arousing, persisting, sustaining, and directing behavior in school (Skinner, 1947). Authors use *desire* and *drive* as synonyms for LM. Motivation is posited as a synthesizing factor for human cognition and affect known as fundamental aspects of any functioning including learning. In the last few decades, the term *academic motivation* became very popular (Vallerand et al., 1992, 1992; Frontier et al., 1995; Green et al. 2006). Despite of the variety of terminology, the actual subject being studied is LM.

“Motivation is a desire for and movement toward special goal. It is more than a wish or a day dream: true motivation awakens and sustains actions that propel a person closer to a goal. At its base, motivation is also a search for personal meaning and a reflection of a person’s deepest values” (Mwenda, 2012). This definition emphasizes that motivation determines not only what people do, but also how they reason what they do. Such a multifaceted understanding of motivation is important because it exposes its specifics in learning. And LM can be defined not only as the student’s desire to reach some educational goals, but also as his/her acceptance and perception of the educational goals, tasks, and requirements as his/her own personal and meaningful values.

Scholars distinguish between intrinsic and extrinsic motivation, “based on the different reasons and goals that give rise to an action” (Thoonen et al., 2011). When describing students’ motivation to learn, they define intrinsically motivated students as undertaking an activity “for its own sake, for the enjoyment it provides, the learning it permits, or the feelings of accomplishment it evokes” (Lepper, 1988). Extrinsically motivated students perform in order “to obtain some reward or avoid some punishment external to the activity itself” (Lepper, 1988); they “do something only because it leads to a separable desired outcome” (Thoonen et al., 2011). Intrinsic behavior does not require a reward, and it results in high-quality learning (Ryan & Deci, 2000).

Along with the concept of motivation, the concept of amotivation was introduced, although later. In the last decades the new phenomenon has been actively researched (Vallerand & Bissonnette, 1992).

To study LM, specialists tend to use interviews and surveys measuring students’ perceptions and opinions (Fortier et al., 1995; Pakulina & Ket’ko, 2010; Thoonen et al., 2011). Another method is based on the analysis of products of human labor and creativity which reflect in-depth personal characteristics. Being more direct, the latter is at least as, or even more objective and efficient than the prior. This method (sometimes in a combination with a survey) is fruitfully used by educators nowadays (Hartnett, 2010; Hartnett et al., 2011; Dadach, 2013). We also use this method for our study of LM. One’s activity is the best projection of one’s personality and motivation, and among many human activities learning is probably especially significant.
Research Tasks and Methodology

In this work, three major tasks were set: to study how LM differs in its quantity and quality in three categories of students: motivated, unmotivated (problem), and overmotivated (enthusiastic) students. It was also explored how participants’ LM influenced their academic achievement within a new and based on informational technologies learning environment.

The investigated population consisted of fifty students, current and prospective school teachers, who took the author’s online psychology course Child Development and Learning in the Cultural Context. The study was conducted within two semesters: in fall of 2012 with twenty participants and in fall of 2013 with thirty ones. We will name them the A-, and B- groups.

The research methodology included the analysis of the students’ coursework submitted to the course site and mathematical analysis of the collected data. To analyze students’ coursework, we used the criteria for recognizing unmotivated, motivated, and overmotivated students, rules of coding students’ data, and the 100-scale of LM for representing students’ individual as well as collective data that were developed and designed by the author in her previous similar research (Toom, A., 2013; 2013). Also, at the end of the semesters, students’ final course grades were collected and compared with their LM. The Pearson’s Correlation coefficient was calculated.

The hypothesis consisted in the following. There were certain requirements determining the way in which the coursework should be done to be accepted and graded. If a student met those requirements, we concluded that s/he had LM; a failure to meet these requirements was interpreted as lack of LM.

Quantification of Learning Motivation

The Online Course Content and Requirements

Homework assignments (HM). Each assignment consisted of two parts: reading the textbooks or Internet articles provided by the instructor and use this information to answer questions also provided. There were eleven homework assignments; each of them typically included three questions. The activity was mandatory. Requirements for this activity included:

1. Timely submission: each assignments should be submitted by a due date scheduled
2. Sufficient quantity: all questions should be answered completely
3. Sufficient quality: all answers should be brief (no longer than 60-80 words), clear, to the point; key words/phrases in every answer should be formatted as bold face.

Group discussions on the Discussion Board (DB). There were five discussions; each of them was devoted to one psychological or educational issue related to the course topic. Students were expected to respond to a question posted by the professor, share their experience, and exchange opinions with classmates. The activity was mandatory. Requirements for this activity included:

1. Timely submission: responses should be posted by a due date
2. Sufficient quantity: at least two responses ought to be posted for each discussion – one response to the professor and the other to any classmate; at least two references should be provided for each discussion forum
3. Sufficient quality: responses were expected to be substantial, supported by the student’s personal educational experiences and the references found in e-libraries or e-data bases.

The Final Research Paper (RP). One research paper had to be written on the topic “Comparative Analysis of Different Theoretical Approaches to Child Development and Learning”. The activity was mandatory. Requirements for this activity included:

1. Timely submission: research papers must be submitted by a due date
2. Sufficient quantity: bibliography and the paper outline should be submitted preliminary
3. Sufficient quality: the paper content should correspond to its topic, and the topic should be developed in full

The Educational Forum (EF). A special forum on the DB was open, and current educational, scientific, and administrative news in articles and on videos about children without and with special needs were presented there. There students could place their own findings. Participating in this activity was optional. No requirements were given.

The Principles of Coding Data

All students’ learning activities and actions that comprise them were recorded in the course site, analyzed and coded accordingly to their correspondence to the course requirements. Three characteristics of students’ coursework were measured: temporal, quantitative, and qualitative; each allowed values 0, 1, or 2.

Coding homework assignment:

1. Temporal characteristic: a missing homework received 0; a timely submission received 1; a submission done in advance (more than a week before a due date) received 2.
2. Quantitative characteristic: homework with two missing answers received 0; homework with one missing answer received 1; homework with all answers received 2.
3. Qualitative characteristic: homework with at least one incomplete or incorrect answer received 0; homework with all complete and correct answers received 1; homework with at least 2 answers out of 3 expressed “briefly, clearly, and to the point” received 2.

Coding DB post:

1. Temporal characteristic: missing responses received 0; timely responses received 1; responses posted in advance (more than a week before a due date) received 2.
2. Quantitative characteristic: one or less responses received 0; two responses received 1; more than two responses received 2; one or less reference received 0; two references received 1; more than two new references (not found by classmates) received 2.
3. Qualitative characteristic: a response missing or not including a personal experience received 0; a response presenting a personal experience received 1; if a student expressed a new idea stimulated by references or the discussion, his/her response received a “2”.

Coding the Final Research Paper:

1. Temporal characteristic: missing paper or a late submission received 0; timely submission received 1; advanced submission (at least a week before a due date) received 2.
2. Quantitative characteristic: missing preliminary bibliography and paper outline received 0; bibliography and outline that needed revising received 1; complete bibliography and correct paper outline received 2.

3. Qualitative characteristic: missing paper received 0; paper needed revising received 1; complete and rich in content paper received 2.

**Coding participation in the Educational Forum:**

1. Quantitative characteristic: no attendance received 0; one attendance received 1; two and more attendances received 2

2. Qualitative characteristic: no participation received 0; participation in discussions without sharing personal experiences received 1; active participation with sharing personal experiences and contributions in a form of new Internet resources received 2.

**The Scale Design and Data Representation**

The 100-point scale of LM was designed for the author’s specific course with its unique content and certain requirements. To develop it, four hypothetical students were invented. Two of them were called *perfectly motivated* and *perfectly unmotivated* students; they determined the left-most and right-most points of the scale. These individuals do not exist in reality; they with their highest and lowest scores were needed for mathematical transformations of the real students’ data. Two other imaginary individuals were the *lower boundary* and the *upper boundary* students. They were supposed to separate results of motivated, unmotivated, and overmotivated students from each other.

The data of four hypothetical students was coded according to principles described above. The row data were calculated and scaled. First, all the four values representing four types of the coursework were normalized: in each category the score was divided by the maximum possible score, and then a weight of 25% was attributed to all of them.

The course work of each participant of the study was coded identically. So, after these necessary mathematical transformations, every student hypothetical as well as real could be characterized by a tuple of four values, and their sum represented his/her LM manifested in the course.

**The perfectly motivated student** does everything in the best way. He is not just always on time, he is consistently ahead of the course work’ due dates. He not only meets requirements regularly, he always exceeds them. He has the best scores for each type of the coursework. LM of this student is 100% and determines the right-most points of the scale.

**The perfectly unmotivated student** systematically violates all aspects of the course policy, does not study, and fails. He has a 0 for each type of the coursework. LM of this student is 0% and determines the left-most point of the scale.

**The lower boundary student** is modeled according to the college’s policy determining which academically underachieving students should still be given a chance to eventually complete the coursework and receive a passing grade. Such a student should submit the maximum of assignments required (except the final paper) and complete at least 50% of the coursework by the end of the semester. This students’ row and scaled tuples of four values are shown in the Table 1. The sum 23% should be considered the boundary on the scale separating results of unmotivated students from motivated ones.
The upper boundary student is designed according to the author’s pedagogical experience: if something not quiet ordinary occurs in a student’s activity once, it might be random. However, if it happens twice, it points, rather, to a possible consistency. Such a student over exceeds every requirement for every type of coursework at least twice. Also, such a student prepares bibliography, the paper outline and the final paper that are accepted from the first attempt. This student’s LM and all corresponding data are shown in the Table 1. The sum 69% is the boundary separating results of motivated students from overmotivated ones.

Table 1

The Hypothetical Students’ Raw and Scaled Data

<table>
<thead>
<tr>
<th>Hypothetical Students:</th>
<th>Raw Data</th>
<th>Scaled Data</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>HW</td>
<td>DB</td>
</tr>
<tr>
<td>Perfectly Motivated</td>
<td>66</td>
<td>40</td>
</tr>
<tr>
<td>Perfectly Unmotivated</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Upper Boundary</td>
<td>48</td>
<td>28</td>
</tr>
<tr>
<td>Lower Boundary</td>
<td>44</td>
<td>15</td>
</tr>
</tbody>
</table>

Note: HW = homework; DB = discussions; RP = research paper; EF = educational forum

On the Figure 1, the results of the A-group of students are distributed on the scale. Points 26 and 69 show the lower and the upper boundaries for results of motivated students. Twenty participants are displayed as stick-figures next to the corresponding locations on the axis with their individual LM scores on the “faces.” Most students of the A-group are motivated and located in the middle part of the scale. Three student (with their scores 70, 74 and 88) located to the right of the middle area’s upper boundary are overmotivated, and two students (with their scores 16 and 20) located to the left of the lower boundary are unmotivated.

On the Figure 2, the results of the B-group of students are distributed on the scale. Most students of the B-group are motivated and located in the middle part of the scale. No students are located to the right of the middle area’s upper boundary, that is, there are no enthusiasts in the B-group. Seven students (with their scores 14, 22, 24, and 25) located to the left of the lower boundary are unmotivated.
The Results

Analysis of the Investigated Population

Motivated but not outright enthusiastic students constituted a majority in both investigated groups: 75% in the A-group and 73% in the B-group. Unmotivated students constituted 10% in the A-group and 27% in the B-group. Overmotivated students constituted 15% in the A-group and were not present in the B-group. It is shown on the Figure 3.

The Correlation between LM and Academic Performance

To find out how students’ academic performance depended on their LM manifested in the course, we studied the correlation of their motivation with final course grades. The Pearson’s Correlation Coefficient was calculated with the use of the formula:

\[ K = \frac{n(\Sigma xy)- (\Sigma x)(\Sigma y)}{\sqrt{n\Sigma x^2-(\Sigma x)^2} \sqrt{n\Sigma y^2-(\Sigma y)^2}} \]
where \( x = (x_1 \ldots x_n) \) and \( y = (y_1 \ldots y_n) \) are distributions of the two chosen variables; and \( n \) is the number of students in the group (How to Compute Pearson’s Correlation Coefficient).

The study revealed a high correlation coefficient \( K_{LM,FG} = 0.61 \) between students’ LM and their academic achievement for the A-group and \( K_{LM,FG} = 0.52 \) for the B-group.

**Reliability and Validity of the Results**

In each of two semesters, the category of motivated students constituted the highest percentage (see Figure 3); it proves reliability of the result. The result reflects the fact that students enroll into educational programs for certain reasons: some have already worked in school system, some others were preparing for that, – and obtaining the Master’s degree is an important step for their professional growth and career.

It was found that students’ academic achievement positively correlates with their LM. The correlation coefficients are high for two groups of students studied the same subject with the same professor in different semesters. Similarity of this result for two different semesters proves its reliability. Additionally, the result is supported by discoveries made in other studies of LM (Fortier et al., 1995; Singh et al., 2002; Broussard & Garrison, 2004; Green et al., 2006); this points to the validity of the obtained results.

**Discussion**

**Structure of Learning Motivation**

Two components of students’ LM – grade-oriented and knowledge-oriented – were described in our study under the names pragmatic and cognitive. In essence, they link back to the familiar intrinsic and extrinsic motivation. However, for our specific study terms cognitive and pragmatic seem to be more adequate. This usage of terms is consonant with some other authors’ ideas about the content of LM (Csikszentmihalyias, 1975; Whitney & Hirch, 2007).

The components are co-existing, interrelated, and both are necessary for fruitful learning. However, unlike the pragmatic motivation that everybody (even unmotivated students) had, in our study the cognitive motivation was noticed in a few. The ratio of the grade-oriented students to those who were both grade- and knowledge-oriented was approximately 12:1.

This is understandable: cognitive LM is an infrequent phenomenon. The explanation is analogous to A. Maslow’s interpretation of the hierarchy of motives. Physical needs (for food, shelter etc.) and the need for safety are located at the bottom of the hierarchy and are applicable to everyone. The more spiritual a motive is, the higher it is located, the less frequent it is. Thus, the motives for self-actualization or knowledge are a privilege of a few (Maslow, 1970). Similarly, the cognitive component of LM, as non-materialistic and spiritual by its nature, is at a higher position in the structure of LM and exhibited by a few.

Three categories of students – unmotivated, motivated, and overmotivated – differed in quantity as well as quality of their LM. The more complex LM was, the stronger it was. Students who combined pragmatic and cognitive types of LM had the higher scores on the scale.

The students’ final grades highly correlated with their LM. However, a further analysis of the data showed that the dependency was only unidirectional. That is, highly motivated students tended to have good grades, but a good grade did not always indicate a high LM. According to
our online course policy, for being successful it was enough to follow the instructions, meet requirements, and timely provide correct and informative mandatory assignments. That’s why students lacking cognitive LM also could have good grades.

The Learning Style of Unmotivated Students

Unmotivated students are worse than others in all indicators of their activity. They miss their homework. If they submit assignments, their assignments have missing answers. If answers are present, many of them are incomplete and incorrect. Such students often miss discussions with classmates on the Discussion Board. If they participate, their responses are unsupported by references and personal experience. They are late with their Final Research Paper or their Bibliography is insufficient. Finally, they never participate in optional activities because they do not even know about their existence. Their knowledge of the course site and their computer skills are poor. These students turn out to be poorly adjusted to a new learning environment and have no ability or desire for acquiring new learning skills; their enrollment into the online courses is probably a mistake.

As the results show, they lack LM because of their incompetence as computer users. Another factor preventing them from the successful study in the new learning environment is psychological: they lack such characteristics as cognitive curiosity and self-discipline that are responsible for academic performance and very closely interconnect with LM.

Unmotivated students constituted 10% of the A-group and 27% of the B-group. The percentage of unmotivated or problem students tends to increase as semesters are progressing.

The Learning Style of Motivated Students

Motivated students follow most instructions of the course exactly as they are given. Neither more, nor less. Very seldom one of the students belonging to this category does an additional work; some others miss one of the activities, but it is not quite typical.

Their course submissions are timely. Their homework assignments are usually complete and correct. To the discussions on Discussion Board, they bring two required postings and two required references needed to support their point of view. Their Final Research Paper usually needs some revision and bibliography is insufficient, but they correct all mistakes before the semester is over.

They perform only the coursework for which they are graded and ignore optional activities offered for their professional growth. They never come to the optional educational forum offered in the online course considering it a waste of time; they neglect it because the activity is not rewarded. Pragmatic interests prevail in them, and their main guiding principle is maximizing the grade and avoiding learning that does not contribute to the grade.

Actually, an attitude found in many of our motivated students corresponds to the values of modern society: «time is money», and people prefer not to spend their time and effort on anything that does not bring immediate profit (USA – Language, Culture, Customs and Etiquette). The question still arises if this philosophy is appropriate for educators.
Motivated students constituted a majority 75% in the A-group and 73% in the B-group. Actually, it is the majority of the whole investigated population. They were responsive, responsible, and successful individuals. However, they were pragmatic learners.

The Learning Style of Overmotivated Students

Overmotivated students are better than others in all indicators of their activity. They are not just on time – they are always ahead of the due dates for their course work. They not only meet requirements regularly – they always exceed them. Their homework is always complete, correct, and contains some new information that was not provided by the reading materials offered in the course; they find this relevant information on their own. Discussing the issues of the subject with their classmates on the Discussion Board, they also over perform. Instead of two required responses they tend to submit five. Instead of two Internet resources for supporting their opinions, they would find five or six. Additionally, their responses are very high in quality – describe personal experiences and have new ideas. Their Final Research Paper needs no revision. From the very first attempt it is complete and rich in content.

These students perform the optional assignments as well as required because they want to receive knowledge relevant to their professional interests even if it is not immediately rewarded. Like everybody, they appreciate grades, but curiosity has a higher priority for them.

Overmotivated or enthusiastic students constituted 15% of the A-group and 0% of the B-group. The percentage of enthusiastic students tends to decrease as semesters are progressing.

Conclusions

Two different, interrelated, and co-existing components of LM observed in the study link back to the familiar intrinsic and extrinsic motivation. Students’ LM within the context of online learning environment was found to have the nature similar to that which was described by the theorists and explorers of traditional class settings.

Motivated participants constituted a majority of the total investigated population. They were reasonable, responsive, and successful individuals who received good grades for the course. However, they were pragmatic or grade-oriented learners. The percentage of overmotivated or enthusiastic and knowledge-oriented students is relatively small and tends to decrease as semesters are progressing. At the same time the percentage of unmotivated or problem students tends to increase.

The study was conducted in one statistically average American college. However, the tendencies that were made out do not characterize just one educational institution. The author suggests that they represent general tendencies in contemporary education, specifically, online distance education.

Considering the results of this study in a wider socio-cultural context, the author suggests that the prevalence of pragmatically motivated students among current and prospective school teachers, the shortage of enthusiastic learners, and an abundance of problem students can be possible significant causes affecting quality of the modern US primary school education and school students’ academic performance. In either case, a further study of teachers’ motivation seems to be a promising scientific direction.
References


Servant-Leadership-Followership:

A Case Study for Educators

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Servant-Leadership-Followership: A Case Study for Educators

Abstract

Servant leadership develops caring, respectful, inclusive communities. The purpose of this article is to investigate its presence from the perspective of two elite NHL hockey players and their leadership style on and off the ice. A face-to-face interview was conducted with Henrik and Daniel Sedin, of the Vancouver Canucks. This case study provides evidence to support the existence of the servant leadership philosophy in sport. In this time of societal violence, especially in hockey, perhaps the Sedins’ modeling of a servant-leader attitude, coupled with their elite status can be a beacon for children and youth today.

_Someone who is admired, as a leader in sport often is, can change the significance of what might otherwise go unnoticed_ (Shogan, 2007, p 16).

If we use the National Hockey League (NHL) as a general reference, the goal is to score against the opposing team, while not being scored upon, and to protect and support each other in the process. Within a hockey team the players are constantly leading and following back and forth as they move over the ice in front of the team goalie. Specific athletes illustrate a variety of functions/roles: e.g., there is the enforcer, who tends to intimidate and who uses body size to overpower members of the opposing team; there are centers, who set up plays and are often the strongest skaters on the ice; there are defensemen, who guard their own goalie from intrusion; and there is the captain who is
supposed to be the one who speaks to the officials. Each member contributes when
needed, but even so, certain elite athletes are acknowledged as the key leaders on their
teams, often identified as team captains and/or select players who score or defend well.
This is not an exhaustive list, of course. Obviously, a well-balanced and successful team
needs players that respond with their particular leadership skills for the good of the team
as a whole.

Since 1980, I have been a student and researcher of leadership, particularly
servant-leadership (Greenleaf, 1991), in the areas of education and community (Crippen,
Please let me explain. After relocating permanently to the province of British Columbia
in December 2009, I decided to become acquainted with the local NHL team, the
Vancouver Canucks. I started by watching their televised games, though I did not know
any names or players. However, leadership is usually easily recognized in team sports,
and something happened over the first couple of games that I watched. I noticed there
were two players with red hair and red beards that seemed different in their approach to
the game and the dynamics between them, the other players and officials. Their
leadership seemed different than usually witnessed in professional sport, namely they
seemed to exemplify a particular philosophy of leadership known as servant leadership. A
much closer and lengthier investigation was necessary to validate my initial impression
and to see if there was actual evidence to support my thoughts.

The two red headed players were twin brothers, Henrik and Daniel Sedin, who
became a catalyst for an in-depth case study (Creswell, 2009; Stake, 1995; Yin, 2009).
Initially, I started writing down my observations and listening carefully to the announcers
of the games. I began to collect newspaper articles about the Vancouver Canucks. I
recorded and/or watched every televised Canucks hockey game from December 2009
until February 2013, broadcast on Sportsnet Pacific, CBC Hockey Night in Canada, and
TSN (CTV) television networks. That was just the beginning of a three-year research
journey investigating the leadership of Daniel and Henrik Sedin.

Leadership though is a broad topic with many interpretations; hence a definition
presented by renowned leadership scholar, James McGregor Burns (1978) will provide
the foundation for our discussion. He defines leadership “as leaders inducing followers to
act for certain goals that represent the values and the motivations – the wants and needs,
the aspirations and the expectations of both leaders and followers” (p. 19). Additional, yet
similar, clarity is offered by sports psychologist Daniel Wann (1997), defining leadership
as “a behavioral process in which one group member influences the other members
regarding the attainment of the group’s goals” (p. 128). Most of the leadership literature
in sport relates to the role of the coach (Rieke, Hammermeister, & Chase, 2008; Shogan,
2007; Wann, 1997), but I believe a particular form of leadership, namely servant
leadership, exists among a small group of elite athletes.

An Introduction to Daniel and Henrik Sedin

Henrik (6 minutes older) and Daniel Sedin are identical twins born in the small
town of Ornskoldsvik, Sweden on September 26, 1980. Their father, Tommy, is a school
vice-principal, who also played hockey and coached them as youth and their mother,
Tora, is a nurse. They have two older brothers: Stefan and Peter. The family of boys was
involved in sports from a very young age, playing soccer and hockey. Daniel and Henrik
began organized hockey at the age of eight, and did not play on the same hockey line
until they were fourteen. They are both married to women from their home village. Henrik has two children and Daniel has three. They reside in Vancouver and return to Sweden each summer to spend time with their extended family.

They joined the Vancouver Canucks in 1999 and have remained ever since. Daniel and Henrik are known for their effectiveness in playing off of one another. Henrik is a skilled passer and playmaker, while Daniel is a natural goal scorer. In 2010, Henrik won the Art Ross Trophy for leading the NHL in scoring points during the regular season and the Hart Memorial Trophy for the player judged to be the most valuable player to the team by the Professional Hockey Writers Association. In 2011, Daniel won the Ted Lindsay Award as the most outstanding player in the league as voted by the NHL Players Association and the Art Ross Trophy for the point-scoring leader. Henrik is classified as an Ironman, having played over 600+ games in a row.

The following paper addresses two elite players, Henrik and Daniel Sedin and their leadership approach both on and off the ice. Four sections form the paper: (i) an introduction to a leadership philosophy, not often identified in sport, called servant leadership; (ii) a synthesis of qualitative research, a case study, used to investigate and analyze the particular leadership style of the Sedin twins; (iii) evidence of any servant leadership competencies (Sipe & Frick, 2009) identified from an interview with Daniel and Henrik Sedin; and (iv) a conclusion to the paper which addresses the possible value of the servant-leader philosophy to sport literature, plus direction for further research.

The Philosophy of Servant Leadership

Exactly, what does this term mean? The term servant leadership was coined by Robert K. Greenleaf (1904-1990) in a small 37-page essay titled The Servant as Leader,
written in 1970 just after he reached retirement at age 66. Greenleaf was in middle management at AT&T and was interested in building caring, inclusive, supportive communities. He lectured at M.I.T. and Dartmouth, and was a colleague of James McGregor Burns whose definition of leadership is sited above. Greenleaf believed that one had to first want to serve before leading, and it was through one’s service that a person was recognized as a leader. He defined a servant-leader as:

A servant-leader is servant first... It begins with the natural feeling that one wants to serve, to serve first. Then conscious choice brings one to aspire to lead. The difference manifests itself in the care taken by the servant first to make sure that other people’s highest priority needs are being served. The best test, and difficult to administer, is: do those served grow as persons; do they while being served, become healthier, wiser, freer, more autonomous, more likely themselves to become servants? And what of the least privileged in society: will they benefit, or at least, not be further deprived? (Greenleaf, 1991, p. 15)

It is important to explain the term servant in servant-leader. Greenleaf believed that when one serves, “one is not a service provider, a martyr or slave” (Sipe & Frick, 2009, p. 38). The servant is one who “consciously nurtures the mature growth of self, other people, institutions, and communities – the objective of which is to stimulate thought and action for building a better, more caring society” (p. 38). Much has now been written about Greenleaf’s servant leadership philosophy with Larry Spears (former Executive Director of the Greenleaf Center in Indianapolis, Indiana) as the driving force behind its analysis (Frick & Spears, 1996; Spears, 1998a, 1998b).
Spears (1998a) identified ten servant-leader characteristics that appeared consistently throughout all of Greenleaf’s writing: (a) listening, (b) empathy, (c) awareness, (d) healing, (e) persuasion, (f) conceptualization, (g) foresight, (h) stewardship, (i) commitment to the growth of others, and (j) building community. It should be noted that those who practice the philosophy of servant leadership and aspire to being servant-leaders have the same strengths and weaknesses of all human beings. Thus, a perfect servant-leader seldom exhibits all ten characteristics: it is something to strive for during life’s journey. A list of ideal servant-leaders could include Gandhi, Martin Luther King, Nelson Mandela, Elizabeth May, Eleanor Roosevelt, Stephen Lewis, and Parker Palmer.

More recently, Sipe & Frick (2009) have defined a servant-leader as “a person of character who puts people first. He or she is a skilled communicator, a compassionate collaborator who has foresight, is a systems thinker, and leads with moral authority” (p. 4). Listed below are seven pillars and 21 core competencies related to each of the seven, as identified by Sipe and Frick. Each pillar contains three competencies and the authors suggest, “these competencies can also represent a set of performance appraisal metrics-barometers of professional growth for the continuous evaluation of your leadership strengths and development needs” (p. 6). The seven pillars are:

**Pillar I – Person of character:** Makes insightful, ethical, and principle-centered decisions

- maintains integrity
- demonstrates humility
- serves a higher purpose (p. 15).

**Pillar II – Puts people first:** Helps others meet their highest priority
• displays a servant’s heart
• is mentor minded
• shows care & concern (p. 34).

Pillar III – Skilled communicator: Listens earnestly and speaks effectively
• demonstrates empathy
• invites feedback
• communicates persuasively (p. 45).

Pillar IV – Compassionate collaborator: Strengthens relationships, supports diversity, and creates a sense of belonging
• expresses appreciation
• builds teams & communities
• negotiates conflict (p. 77).

Pillar V – Foresight: Imagines possibilities, anticipates the future
• visionary
• displays creativity
• takes courageous, decisive action (p. 104).

Pillar VI – Systems Thinker: Thinks and acts strategically, leads change effectively and balances the whole with the sum of its parts
• comfortable with complexity
• demonstrates adaptability
• considers the “greater good” (p. 130).

Pillar VII – Moral Authority: Worthy of respect, inspires trust and confidence, and establishes quality standards for performance
• accepts & delegates responsibility
• shares power and control
• creates a culture of accountability (p. 155).

Because I was very familiar with Spears’ ten characteristics and cognizant of my bias in this regard, I wanted a more recent framework that was deeper and broader in scope. Careful scrutiny of the two lists offered by Spears (1998a) and Sipe & Frick (2009) reveals much overlap and consistency, though the pillars identified by Sipe and Frick (2009) are more profound than those identified by Spears (1998a) for two reasons. First, Frick (2004) was the author of Robert K. Greenleaf’s comprehensive biography, having access to all the Greenleaf papers and related documents when doing his research. Second, it seemed to me that Frick’s knowledge base of servant leadership would provide a rigorous contribution for analysis and Frick’s research was inclusive of the growing body of literature on servant leadership (Frick & Spears, 1996; Stone, Russell, & Patterson, 2004; Wong & Page, 2003). The 21 competencies (Sipe & Frick, 2009) easily slotted into the ten characteristics identified by Spears (1998a), yet expanded upon the understanding of each.

Without reviewing the entire 21 competencies, suffice to say that foresight is present in both lists, strengthened by the competencies of vision, creativity, and decisive action in the competencies. As well, listening incorporates feedback, expresses appreciation, and communicates persuasively. Commitment to the growth of others is consistent with Sipe and Frick’s (2009) serves a higher purpose, is mentor-minded, invites feedback, shares power and control, demonstrates adaptability, considers the greater good, and builds teams and communities. Hence, the seven pillars and the 21
competencies effectively provide a conceptual framework for the case study, enhancing upon Spears’ (1998a) ten characteristics.

The Case Study Synthesis

The following section will explain the choice of qualitative research and the strategy of a case study approach. Creswell (2009) explains, “qualitative research is a means for exploring and understanding the meaning of individuals to a social or human problem” (p. 4). Henrik and Daniel Sedin were the two individuals and their leadership style and interaction/behaviour as hockey players was the focus of the research. Creswell provides a clear description of the case study approach as a strategy of inquiry in qualitative research, in which the “researcher explores in depth a program, event, activity, process, of one or more individuals. Cases are bound by time and activity, and researchers collect detailed information using a variety of data collection procedures over a sustained period of time” (p. 13). Although I initially became aware of these players in December 2009, I did not formalize the data gathering process until late spring of 2010, which continued until February 2013.

A case study approach provided a research method for in-depth analysis of these two elite hockey players and their modus operandi. Two research questions framed the study:

1. How did the Sedins demonstrate their unique leadership style in hockey?
2. Specifically, was there evidence to support the philosophy of servant leadership?

Data Collection

Yin (2009) suggests six main sources of data for case studies, of which one is an interview. Questions were developed with my doctoral student, Bill Brown (pseudonym),
to be used in a personal interview with the Sedin twins. We sifted through the list of questions over two weeks, revisiting the wording and intent of each, and eventually selected 16 questions (Appendix 1). I attempted to achieve qualitative validity (Creswell, 2009, p. 190) over the research time period by frequently doing informal checks with two of my doctoral students who play hockey, several friends who attend the Canucks games in Vancouver on a regular basis, and other colleagues in my department for their observations and perceptions of the Canucks games and the Sedins as players.

The process.

Gaining access for an interview with the Sedins proved to be a lengthy process. I realized this particular research was not going to be completed quickly and would require patience on my part as a researcher. As a member of the Human Research Ethics Board (HREB) at the University of Victoria and as a researcher, I am providing these details so they may be helpful to others embarking on research that involves a major commercial organization.

I first asked colleagues within the Faculty of Education at University of Victoria, including Physical Health Education, who might have connections with anyone in the Canuck organization. No one could help. Next, I made several phone calls to Rogers Arena in Vancouver and finally reached a contact person in Canucks Communication. I explained who I was and asked what chain of command I should follow. After several phone calls, I moved to sending e-mail correspondence, though this was not fruitful.

After five months, I finally decided to write to the Canucks senior administration in a formal (university letterhead), two-page, single-spaced letter (August 2, 2011) detailing my research and why I wanted to interview the Sedin twins. Letters were sent to
Mike Gillis (General Manager), Alain Vigneault (Coach), Henrik and Daniel Sedin, and Jennifer Rollins (Communications Coordinator). When I returned after Labour Day weekend 2011, there was a voice message from T.C. Carling (TC) – Vice-President of Communications & Community Partnerships and the Executive Director of Canucks for Kids Fund – expressing an interest in my letter that had been vetted with the Canucks management.

TC was involved in the start-up of the new 2011-2012 season and we played phone tag for a few days. Once we connected, he explained that it was important that the players were protected, etc. I explained about the Human Research Ethics Board (HREB) process and that I would send him the completed 18-page ethics application form to review. The University of Victoria HREB upon submission approved this and a copy was sent to TC, which he shared with Daniel and Henrik. Although my formal letter of introduction was very detailed about my intentions and background, I wanted complete transparency in the procedure of safety checks along the way.

By September 15, 2011 it was decided to hold the interview on Monday, November 14, 2011, first thing in the morning. I was permitted to bring my doctoral student, Bill Brown, with me to do the tape recording of the session. We arrived at Rogers Arena security and signed in at 8:15AM, after which TC escorted us up to the second floor Conference Room. The interview lasted 75 minutes and the Sedins answered all questions carefully and fully.

I had sent the 16 interview questions previously to them (through TC). I felt this was important because Swedish is their first language and I wanted to give them time to reflect upon their responses. We also sent a brief biography about ourselves so that the
Sedins would have some basic familiarity with who we were. Information such as Bill playing hockey and my son having the same birthday as the twins were mentioned. We were just trying to make some connections before meeting them that morning by “breaking the ice”.

There were ground rules that we agreed upon in my early conversations with TC: Bill would transcribe the interview and the transcription tape would be sent to TC and he would deliver it to the Sedins. Once they reviewed the transcription and agreed with the content and accuracy, we could then begin to write an article. Once the article was completed, it was sent to TC for sharing with the Sedins, after which they all accepted the content and gave permission for the article to be forwarded to a journal for peer review. The first article was submitted in spring 2012 and accepted for fall 2013 publication in the International Journal of Servant Leadership. This present paper is the second academic article, which will go through the same approval process before submission.

**Data Analysis**

I am a qualitative, archival researcher and am used to the slow, tedious work needed to sift and cluster artifacts, photographs, newspaper clippings, and recorded narratives, and I was comfortable with that process. Creswell (2009) states:

> The data analysis involves making sense out of text and image data. It involves preparing the data for analysis, conducting different analyses, moving deeper and deeper into understanding the data (some qualitative researchers like to think of this as peeling back the layers of an onion), representing the data, and making an interpretation of the larger meaning of the data (p.183).
He further suggests, “case study research involves a detailed description of the setting or individuals, followed by analysis of the data for themes or issues” (p. 184). So, I returned to my big paper approach of clustering the comments from the complete transcript of the Sedin interview, in order to respond to the first research question: How did the Sedins demonstrate their unique style in hockey?

I reread the transcript completely several times over two days “to obtain a general sense of the information and to reflect on its overall meaning” (p. 185). I started to code the interview text, by means of thematic analysis, into clusters or similar chunks and then into categories. I used coloured highlighters/markers to indicate common ideas/topics as themes began to take shape. The next section outlines the five themes that emerged.

**Emergent Themes from the Transcript**

The following five themes emerged from the Sedin interview transcript: (a) family values/culture, (b) work ethic, (c) building community, (d) caring/respectful character, and (e) growth/learning.

**Family Values/Culture**

The Sedins were consistent and repetitive about the importance of their parents and especially their older brothers, Stefan and Peter, in their lives. They were always involved in discussions, outings or games in Sweden as a family. As youngsters the twins’ inclusion was transferred to the schoolyard and into sports. There was a mutual respect regardless of age or role in the family. The twins speak clearly about this pattern of behaviour in the interview:

Henrik Sedin (HS): We were taught from early on about helping, and helping out, that we were important in our family. When we were sitting around and talking, that our thoughts
and ideas were as important as anyone else’s. Even from when we were little. And also, we had two brothers… they always let us be involved with their friends and what they were doing and I think that taught us a lot of things when we grew up.

Daniel Sedin (DS): I think that’s true, our brothers always made us a big part of their friends and we could always play with them, and I think that’s been in our life since that happened. I mean we all try to help others, and make everyone feel like they’re involved.

The Sedins return to Sweden each summer with their children to reinforce the bond with grandparents, aunts, uncles, and cousins in order to maintain the connection with their Swedish culture. They explain about their approach to their children:

HS: You treat them as what they do and what they say as, it’s important to us, and that they’re not just kids, and we try to feel as they’re important and to treat everyone else like they want to be treated themselves. And that’s the way we’ve been brought up.

DS: Yeah, it’s tough, but I think, when we’re home we really have a lot of quality time with our kids. We take them to the park, and have them spend time with Henrik’s kids, and other friends too. I think to teach them these things; I think they need to spend time, a lot of time, with other kids, and grownups too. To make them understand the values that we try to teach them.

**Work Ethic**

Both brothers emphasize the importance of hard work and practice to improve.

They return to Sweden each summer, continually working out, focusing on speed and strength in particular:

HS: I don’t know, there’s always some things you can get better at. I mean, we’re still not the fastest skaters on the ice. I don’t know how much faster we can get, but there’s
always something you can work on. Our shots can be better, at least mine. So there’s always something you can get better at, and I think once you get to a point that you feel that you’ve reached your peak, that’s the time when you got to maybe take a look at retiring.

DS: Yeah, I think so too. When you start to think that, you can’t get any better; I think that’s when things start to go the other way. So you always have to look for things that can make you better and that’s the only way to stay out there.

Henrik and Daniel practice over and over to achieve the special dynamic they have on the ice. It does not come without a commitment to hard work and involves repetition and drill.

DS: We think hockey the same way always… we’ve practiced together for so long, I mean, I know what I should, what I would have done in a situation where he (HS) is right now. Like, on the ice, I think we know what the other’s going to do. 

HS: I think we’ve been through every possible situation on the ice, we’ve been through at least ten times, and if he has the puck behind the net, and he skates one way I know where he wants me to go, and the same thing goes if I have the puck, and if I’m crossing the blue-line and he is behind me, or whatever, we’ve been through those situations a lot of times. It makes it easier.

I asked about the moments before the game and their reflective, quiet approach with their heads down sitting silently on the bench in the locker room. This was Daniel’s reply:

DS: I think at that moment you’ve done everything you can to prepare and you just get ready for you game. I think, on our team at least, we try to prepare, it’s more the day
before the game. I mean, you talk to guys; you talk about what you’re going to do tomorrow. When that time comes, you want to go out there and show that you’ve been preparing the right way, and you’re ready to go.

**Building Community**

The Sedins commented on their involvement and commitment to many types of community: their community of Ornskoldsvik, Sweden; the Vancouver Canucks organization as community; the team as a community; and the local community of Vancouver in particular. They spoke about these various scenarios:

HS: I think for us, it’s really important that everyone feels involved. It doesn’t matter if you’re not playing, or if you’re playing four minutes. We try to have them involved, having them feeling maybe as a bigger part of the team, as big a part of the team as they can. That’s really important to us, that we have everyone feeling important.

DS: I think when we first got here, ten or eleven years ago, that was the first thing we got taught. We realized that it is a big part of being a Canuck, helping out in the community, and going to the hospital and seeing kids, and that’s probably the biggest part of being a Canuck… So, it’s an important part of our lives, and especially when we’ve got kids ourselves, you realize how important those places are.

During our conversation Henrik recalls a sense of building community that began from a young age:

HS: Well I think, coming back to that making everyone feel involved, I think in school and recess or gym class, I mean a lot of times there were a few guys that were maybe a bit better than everyone else, and they wanted to play whatever sport they could, and we always felt like we’re going to do this as a class; we had everyone involved, like girls and
maybe kids that weren’t as good as everyone else and we always made them feel like they could be a part of the group.

**Caring/Respectful Character**

Henrik and Daniel are polite, caring individuals. They referred to caring many times during the interview and the importance of respect for everyone, regardless of role. New players, especially the young ones, have to adjust to playing with the Sedins. The Sedins realize and appreciate how difficult this can be:

HS: It’s a tough thing for whoever plays there to be in that spot, because they know that they’re going to have to score, and they’re going to have to produce, and if they don’t, there’s going to be a different guy there… It’s not easy, so we know we try to make them as comfortable as possible and have them relax and I think it’s, I think we’re pretty easy players to play with. We try to keep it simple a lot of times, and try to talk to them as much as possible.

They realize that they are role models and the responsibility that comes with it. This is important to them and once again they refer to their brothers in Sweden, the way they grew up and the influence of their siblings upon their own values and behaviours.

DS: Well I think; we were always a role model. I mean, hockey is big in Canada, as you know. So I think we are obviously role models for a lot of kids, and people. For us, I think, when we grew up, our role models were our older brothers, and I think we realized what they meant to us, and that makes us realize how important we are maybe for kids and people in the community. So, for us growing up we were pretty much exactly how our brothers are. I mean, they taught us a lot, and their values and everything they did, they influenced us.
It was interesting to note their opinion of each other and how they want to be remembered:

HS: He (D. Sedin) cares about people; he listens to his teammates, and his friends. I mean he’s there and he’s fun to be around. I think that’s it.

DS: I would say the same things too, but he’s (H. Sedin) always a step ahead of everyone else I think in his thinking. When we come to the rink for example, he’s always thinks about what needs to be done, and what players that maybe he needs to talk to. He’s a step ahead of everyone else in that department, and that’s what makes him a great captain and a great teammate.

HS: Yeah, I think hockey, you have a talent, and you do your best to be the best player you can be, and without that talent growing up, it’s tough to get somewhere, so you get a lot of things for free in hockey, but as a person, I think that’s where you can make the biggest difference, in a community or with your friends, or teammates, I think you want to treat everyone else like you want to be treated yourself, and you want to be remembered as someone that cares, and makes a difference. If it’s a big difference, or a small difference, or it’s just showing that you care about people or whatever, I think that’s more important.

DS: Yeah, I think if teammates and people say that they enjoyed our company and that we made them better people, I think that’s good enough for us.

When asked about a crucible moment (a major turning point) in their lives; they were in complete agreement about the decision they made to stay in Canada and to be true to themselves. Their strong sense of character was clearly demonstrated in this situation:
HS: We didn’t have a big failure until maybe when we got over here, and we realized how tough it was over here, and we went through a tough couple of years hockey wise, and living here too without family for the first time… we had to make a choice, if we were to stay here and fight or go back to Sweden and take the easier route.

Their appreciation and respect for everyone was evident when speaking about people in general along with their positive attitude:

HS: It doesn’t matter if it’s someone that works in the building, or in the staff, or trainers, or coaches, or whatever it is. You have to feel important. It doesn’t matter what you do, and that’s something that I think you’ve got to take seriously, to say hi to people when you walk by, or whatever it is. And that’s always been the way we’ve tried to do things, and I think it’s important.

DS: Yeah, coming in with a positive attitude. There’s going to be ups and downs for everyone, but if you try to stay positive and be happy, I think it can influence people to do good.

Growth/Learning

The opportunity to personally keep growing and learning remains a high priority for the Sedins. As children they watched their brothers on the ice and used their example to become better hockey players. But, they also see encouraging growth/learning in the other players on the team as a duty too.

HS: You’ve got to bring out the best in each and every one, and have them feel that they’re a big part of the team, and it comes from talking to them, being in a relationship, or having them grow as persons, and feel that they’re the best they can be (on the ice and off the ice). That’s when you, I think, get better as a team.
DS: We have a group here where we have a lot of leaders, and there’s times when you need to make them a leader. Hank, he’s the captain, but he can’t be a leader all the time. I think he needs to make other players lead to. That’s a big part of a team that’s successful. I think having everyone realize that they can be a leader at a certain moment, and then… you’ve got to let them handle the situation and make them grow. I think when you have that, everyone’s taking a step and getting better, as a person, as a player. That’s when you can kind of take a step back and you don’t need to be a leader anymore.

Being a leader requires knowing when to step back, along with knowing when to fully engage, and having the accumulated wisdom to strike a balance in those actions:

DS: When we leave this rink we don’t think about the game. The first few years I think 24/7 we thought about hockey and that’s a problem. I think, when you get to the rink you focus for four hours, five hours when you’re here, and then when you leave, you try to stay away from it.

Thematically, I have identified five themes that appeared in the Sedin interview, which occurred several times indicating repetition and consistency of thought, and thus were not isolated comments. Using the themes developed and the original transcript, I now turned to my second research question.

Research question #2: Specifically, was there evidence to support the philosophy of servant leadership?

**Connecting the Themes to the Seven Pillars**

Within the five themes mentioned above, there is evidence linking the themes to the Seven Pillars of Servant Leadership (Sipe & Frick, 2009). Often the evidence is overlapping, i.e., much of the theme of family values/culture illustrates that regardless of
the person(s) and roles of the other people involved, the Sedins always demonstrated respect, and civility. They return each summer to Sweden to reinforce their cultural heritage for themselves and their families. They encourage participation in Canadian and Swedish activities and organizations for themselves and their children. They are guided by a strong, inclusive value system that promotes positive self-worth among everyone. Ultimately it is about being a better person and helping others to be that way too.

Relationships are important to them, on and off the ice. The twins spoke clearly about supporting other young members of the Canuck team and helped them grow and learn, especially when these young players joined them playing on the first line. The success of the team was paramount too. They are persons of character (Pillar 1) and compassionate collaborators (Pillar IV).

The theme of a strong work ethic was demonstrated with the realization that it is hard work and practice that builds an effective player, team and family structure. This includes the ability to listen to everyone and to consider carefully all decisions and repercussions. The Sedins are not perfect and recognize their mistakes and responsibilities to each other, their team, the Canucks organization and the local communities (in Vancouver and Sweden). This is indicative of moral authority (Pillar VII) that includes accountability, delegating and accepting responsibility. The twins also spoke about helping their colleagues succeed.

The themes of growth and learning, plus a caring and respectful character are well demonstrated through the Sedins acting as mentors while demonstrating empathy and sensitivity, especially for young players and those who are struggling. Daniel and Henrik listen carefully to these players and offer suggestions to help them improve their game.
This is indicative of putting people first (Pillar II) and also of communicating skillfully (Pillar III) with understanding.

The theme of building community includes having the big picture, a vision of the whole, seeing the team as a group directed toward a goal, with an ability to foresee plays and positions on ice and to creatively make plays to each other and members of the team. This success reinforces an outstanding part of their sportsmanship. They are system thinkers who act strategically on the ice (Pillar VI). They are courageous and dedicated to the team, as Henrik may have to leave a game for a few plays if injured, but usually returns to continue playing.

Servant leaders have foresight (Pillar V) as one of their major strengths (Greenleaf, 1991). Henrik and Daniel strengthen relationships, yet wisely appreciate the diversity of the team players and their various strengths. The concept of team is critical, along with the feeling of inclusivity and belonging, though Daniel is aware that it is up to the players to hold each other accountable. Their comments are candid, constructive and courageous. They decided to bravely stay in Canada and to adhere to their personal style of hockey and to contribute to the culture of the Canucks organization- this was a strong indicator of the moral authority (Pillar VII) being generated within the organization through their servant leadership.

Conclusion

Although initially a skeptic of the philosophy of servant leadership existing in hockey, the evidence provided is somewhat overwhelming that both Daniel and Henrik Sedin demonstrate the seven pillars of servant-leadership. They seem unique in this approach, although additional research into other players in the NHL needs to be pursued.
As well, separate interviews may have gleaned additional perspectives. The next step for this research is to triangulate the findings from the interview with print and televised media content, as well as potential interviews with those familiar with and close to Daniel and Henrik Sedin. In this time of societal violence, especially in hockey, perhaps the modeling of the Sedins, amidst their elite status and servant-leader attitude can be a beacon for youth today. The Sedins have told me that “they are not into mean as an approach”. Daniel and Henrik Sedin demonstrate skill, hard work, care, civil values, inclusivity, and continual growth of self and others, which certainly contribute to building better serving communities, both on and off the ice. We are grateful to Daniel and Henrik Sedin, TC Carling, and the Vancouver Canucks organization for this research opportunity.

NB. This paper forms the case study for the 90 minute workshop for the conference and the contents have been vetted in the PHEnex Journal Dec. 2013.
Appendix 1 - Sedin Interview Questions

1. What experiences can you recall from your childhood of helping others, or showing compassion for others?

2. Can you talk about some of the values that your parents and family instilled in you when you were growing up? How did they go about teaching you these values?

3. There are times in a person’s life when character and values are tested, and they have to make a difficult decision, or take a difficult course of action. This can be called a *crucible moment*. Can you tell me of such a defining moment from your life?

4. How do you work to build relationships with your teammates, and foster a positive team climate?

5. I have watched you just before you play a game. The camera goes into the dressing room. You both seem to be sitting quietly. Please tell me what is going through your mind.

6. Much has been made in the media of you both being professional athletes with strong moral character. Stories have been written about your donation to the Children’s Hospital. How do you view your responsibilities as a role model, and what are your thoughts on the importance of your actions?

7. The Vancouver Canucks are a community. Please talk about your thoughts on a leader’s responsibilities to his teammates and sports community?

8. I know you return to Sweden every summer, to your original community. Can you explain why this is important to you? What do you do when you are *back home*?

9. You are both devoted fathers. What qualities are you trying to instil in your children? How do you go about this?
10. How does a leader admit and overcome his mistakes, and help his teammates admit and overcome mistakes? How do you deal with losing a game? What action, if any, do you take?

11. What do you think is the greatest strength that a leader can have in sport? Are you ever a follower and if so, when?

12. Servant-leadership places value on the skills of listening, empathy, healing, awareness, persuasion, and foresight. How do you think they fit into your particular leadership style?

13. How does an athlete who is such an intense competitor, with such a strong drive to win, lead with such a strong sense of morality, and a caring ethic?

14. In 1970, Robert Greenleaf wrote an essay called *The Servant as Leader*. This is regarded as influential work on servant-leadership, and is viewed by scholars as every bit as important today as it was when he wrote it. The most famous quote from Greenleaf (1991, p.15) is as follows:

   The best test, and difficult to administer, is: Do those served grow as persons? Do they, while being served, become healthier, wiser, freer, more autonomous, more likely themselves to become servants? And, what is the effect on the least privileged in society? Will they benefit or at least not be further deprived?

   What message do you understand from this quote?

15. Henrik, how would you describe your brother? Daniel, how would you describe your brother?

16. How would you like to be remembered? Is there anything else either of you would like to say?
References


Title:
L2 reading fluency development: Successes and failures

Topic area:
ESL/TESL

Presentation format:
Poster session

Presentation description (54 words):
This presentation explains and examines a series of longitudinal studies focusing on using timed and extensive reading to help EFL students develop reading fluency. The studies use both quantitative and qualitative data to explore actual and perceived gains. Fluency development is also modeled and the implications for teaching and further research are also discussed.

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Abstract (169 words)

This paper provides a discussion of the results of a series of 4 longitudinal studies that utilize linguistic and non-linguistic variables predicted to influence L2 reading fluency to examine the successes and failures of L2 learners to improve their English reading fluency. The studies used online Timed Reading and Extensive Reading with participants from a mid-to-high level public and a mid-level private university in western Japan (N=613). In addition to the reading variables, a range of other variables was measured that includes vocabulary size, word recognition reaction times, working memory and speed of thinking. The relationship between the measured variables is explained using correlation and regression, ANOVA and latent variable growth curve modeling, and provides insight for reading researchers and teachers. Results from a short open-ended survey are also examined to discover student impressions of the required activities. Recommendations are made for further research into the issue, and how the findings could be used for Extensive Reading level placement or to assist decision making about remediation for weaker students.
School Followership: What Difference Does it Make?

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Burns (1978) wrote *Leadership*, and introduced the concept of transformational leadership as collaboration toward mutually held goals of leader and follower that benefit both. Kelly’s (1992) *The power of followership*, explains and analyzes the world of followers and their relationship to leaders. More recently, Kellerman (2008, 2012) has generally maintained similar categories of followership in organizations. Literature related to school leadership is abundant; however, the topic of followership and implications of such in schools remains untapped (Crippen, 2012a,b). Kelly’s framework provides a focus for this paper and the important leader-follower relationship that drives the life of a school. Research questions include: Why do people choose to follow? What are the repercussions of different types of followers in schools? How can the leadership-followership relationship be nurtured in a school? Greenleaf (1977) suggests that leadership and followership are on a continuum and we move back and forth along this continuum during our lives. The development of relationships that contribute to leadership-followership are examined in a school context. Feedback suggests that an effective school has established a balanced leadership-followership dynamic that provides opportunities for all members of the school community, regardless of role, to participate.

**Key Words:** relationships followership servant-leadership reflections
School Followership:

What Difference Does it Make.

.....between leaders and followers it was presumed until only recently that leaders should dominate and followers defer. Leaders were generally expected to tell followers what to do, and followers were generally expected to do as they were told. No longer. (Kellerman, 2012, xvi).

Introduction:

Although, initially Burns’ (1978) landmark book Leadership, focussed on politics and business and introduced the concept of transformational leadership (collaboration toward mutually held goals of leader and follower that benefit both), the relevance of the leader-follower relationship seems a good fit for schools too. Burns suggests that leader and follower raise one another to higher levels of motivation and morality and ethics. And, teaching is a moral endeavour. Since then, hundreds of books have been written about various leadership characteristics, styles, outcomes, and purposes. In particular, much literature exists related to leadership in schools: Begley (1999); Fullan (2010); Glickman et al., (2005); Hargreaves (1994); Leithwood et al. (1999); Sergiovanni (1992); Starratt (2011). Less has been written about followership. But, in order to have leaders, we must have followers, although there are usually many more followers than leaders in most organizations and schools. Noted leadership scholar, Joseph Rost (1993) suggests the following definition of leadership: “Leadership is an influence relationship among leaders and followers who intend real changes that reflect their mutual purposes” (p. 102). Followership can be defined as the willingness to cooperate in working towards the accomplishment of the group mission, to demonstrate
a high degree of teamwork and to build cohesion among the group.  
http://leadership.uoregon.edu/resources/exercises_tips/skills/followership.  (Retrieved Nov. 6, 2012). Followership is the act or condition of following a leader. As a former long time school and district administrator and as a member of the academy, it is the intent of the author to draw attention and raise awareness to the issue of followership in schools which has received little attention to date. So, what do we know about followership in schools and what difference does it make?

In 1992, Robert Kelly penned a significant text, *The power of followership: How to create leaders people want to follow and followers who lead themselves*, that explains and analyzes the world of followers and their relationship to leaders. Kelly’s thoughts provide a framework to introduce this brief discussion paper while helping to focus upon the important leader-follower relationship that drives the life of a school. Currently, Barbara Kellerman (2012) has recognized similar followership roles in organizations. In addition, Starratt (2011) carefully reinforces the human dynamic in schools, “In schools we live every day with other persons- teachers, administrators, support staff and children” (p. 74). Starratt speaks about these persons being “a gift” and “our responsibility” and the relationship is reciprocal in which we nurture each other’s potential. A healthy effective school environment can be nurtured through a balance between the leadership-followership interplay. I would suggest that once you assume the mantle of teacher you become a leader (and a follower) in your classroom, school, and learning community (Author, 2005). Regardless, Kellerman (2008) states, “Some of us are followers most of
the time and leaders some of the time. Others are the opposite: leaders most of the time
and followers some of the time” (p. xxi).

Additional clarity to the followership discourse has been sustained through recent works,
* i.e., Bjugstad, Thach, Thompson & Morris (2006) introduce the concepts of followership
motivation, values, trust, and effectiveness; Chaleff (2009) describes followers as
courageous; Goethals & Sorenson (2006) caution us about the role of power in possible
manipulation of followers; Hayes & Comer (2010) stress the importance of developing
trust and inspiration among followers; Hollander (2009) regards the leadership-
followership relationship as inclusive; Kellerman (2008) introduces followers as change
agents; Riggio, Chaleff & Lipman-Blumin (2008) recognize the role of followers as
creators of great leaders. Such ideas have enhanced the earlier works of Greenleaf (1970)
who coined the term servant-leadership and the importance of effective followers.
Greenleaf (1977) speaks about his reflective writings over a twenty year period on the
leadership-followership connection:

They express in different ways my wish that leaders will bend their efforts
to serve with skill, understanding, and spirit, and that followers will be
responsive only to able servants who would lead them—*but they will respond.* Discriminating and determined servants as followers are as
important as servant leaders, and everyone, from time to time, may be in
both roles. (p. 3-4)

Sergiovanni (1992) recognized moral leadership as bringing out the best in followers;
and, Spears (1998) identified the characteristics exemplified by servant-leaders and
followers. Attention toward the concept of followership has provided recognition to its
importance in relation to leadership. It reminds us that we must understand the
functions of both leadership and followership in our schools and that the role of followers and the motivation of followers will have an impact on the effectiveness of the group and the organizational leadership specifically.

Followership seems ripe for further investigation and this is substantiated by Hollander (2009), who encourages “investigation into the relationship between leaders and followers including their needs and expectations and how they may come to be leaders” (p.8). Possible investigative questions should include, but are not exhaustive in nature: Why do people choose to follow in schools? What is the motivation? Are there different types of followers? And, if so, what impact do these issues have on school life? When does one choose to be a leader and when to be a follower? How can the leadership-followership relationship be nurtured in a school? And to what end? Kelly (1992) opines about followers, “Followers at their best, I learned, participate with enthusiasm, intelligence, and self-reliance- but without star billing- in the pursuit of organizational goals” (p. 27) and “For most of us, followership represents 70 to 90 percent of our working day” (p. 29). The following paper will attempt first, to respond to Hollander’s (2009) recommendation for additional research into the understanding and value of followership. Second, in order to link related followership (and leadership) research to school practice, examples of both “in-school” teacher and student activities will be provided within the paper. Third, all questions posed will address the concept of followership in schools as part of the leadership-followership relationship.
School Followership: What Difference Does it Make?

Followership Styles in Schools

When focussing on schools, I am led by Starratt’s (2011) observations that we are dealing with “human beings; humanity; individuals with their own experiential biographies” (p. 1). Although schools are about learning, development, values and ethos, I would suggest schools are all about relationships. Relationships (authentic or genuine) require work to build and strengthen and maintain. It is an ongoing and constant issue that must be a priority if a sense of inclusivity, respect, collaboration, transparency, and caring is to be developed and valued in schools.

Schools are about service to students and usually have formal leaders, a principal, and depending on the size of the school, a vice-principal. In this relationship, the principal is the master-leader and often, a new first-time vice-principal is the follower or apprentice. It seems fair to say that the role of vice-principal is learning how to be a strong leader by following the formal leader’s (principal) example. Today, many vice-principals choose to remain in their role. They are comfortable in the “second” formal administrative position in a school. Principals and vice-principals usually divide the administrative responsibilities within the school. It may be worth mentioning that in very large schools, the principal may be somewhat removed from the rest of the personnel and the vice-principal may be more in direct contact with the school staff. With the move toward democratization in our schools and the use of school teams to develop policy, curriculum, school plans, and school celebrations, the role of team leader and that of team follower has become critical in achieving planned goals and outcomes. Each team member or follower may be sorted into one of seven particular follower paths described by Kelly.
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(1992), “apprentice, disciple, mentee, comrade, loyalist, dreamer, and lifeway” (p. 51). If one relates these followership paths to the internal school personnel groupings, there are those who are comfortable with themselves and just want to contribute to the school goals. These disciples can carry the message of a particular school culture and represent the ideas of the formal leader (principal). There are certain “rules” that school staff follow related to issues of safety, i.e. fire drills, bomb threat, earthquake. I would suggest these could fall under the category of disciple. Others want to change themselves through personal growth (mentee). Each year school teachers develop a personal growth plan and study or develop a new skill to strengthen their teaching in the classroom. New teachers often are assigned a mentor to guide them and act as a resource, especially their first year in a classroom. There are also interpersonal and intrapersonal goals of staff. Some aspire to lead. Apprenticeship, as mentioned in the role of vice-principal, is directed toward mastery of specific administrative skills. Comrades enjoy bonding together where many talents are needed to accomplish a goal, such as in a curriculum development committee. “Some people follow out of personal loyalty to the leader,” (Kelly, 1992, p. 71). A particular school principal may have a broad following of staff within a school which may last over several years. These followers can contribute to the success of this particular principal or vice versa- they could contribute to the principal’s demise if the formal leader is not liked. Dreamers follow their own ideas, their guiding force, not necessarily those of the leader. Such staff are “outside the box” and may “do their own thing”. The last path is that of the lifeway; the person is convinced this path of service or helping others provides the best or most satisfying way of living.
Lifeways and Servant-Leadership

Kelly (1992) directly links the seventh path, lifeways, to Robert K. Greenleaf’s (1970) philosophy of servant-leadership, an ethical-moral, transformational form of leadership-followership:

The servant-leader is servant first. It begins with the natural feeling that one wants to serve. Then conscious choice brings one to aspire to lead. The best test is: do those served grow as persons; do they, while being served, become healthier, wiser, freer, more autonomous, more likely themselves to become servants? (p. 7)

Greenleaf (1977) suggests that we are actually on a continuum during our lifetime. At one end of the continuum is leadership and at the other end is followership. We move back and forth along this continuum during our lifetime and neither one nor the other is better. It is only when we stop moving along the continuum we stop growing and learning and remain in status quo. Thus, if a school is truly developing and growing and learning and is collaborative, then each person is leader and follower at various times.

Greenleaf (1998) states, “even the ablest leaders will do well to be aware that there are times and places in which they should follow” (p. 114). Let me share this example.

Many years ago while a principal in a K-5 school, the computers went down across the school on a Monday morning. The teacher on staff who was the technical support was absent. No-one else on staff was able to help. Out of complete desperation, I went to the Grade 5 classroom and asked who knew the most about computers and three boys stood up. I then asked which one of them knew the most. Two of the boys turned and looked at the same boy. I then explained the situation. This student then went room to room and by morning recess all the computers in the school were up and running. I was the follower and he was definitely the leader in that situation. Perhaps by understanding the
motivation of follower paths, administrators, team leaders, and general school personnel may develop greater sensitivity and smoother interpersonal connections within a positive school community. Relationships require an investment of time and energy (Wheatley, 2005) and time is often restrictive in schools for staff interaction. I believe that using a few minutes to make connections at staff meetings, in the hallway, on yard duty help staff to know each other better. Allocating specific uninterrupted time periods for additional relationship building is a worthy investment that could fit easily into planned professional development days.

Where are you now?

A simple dialogue between teacher colleagues (also with intermediate-senior students) can reveal personal preferences for circumstances that encourage either leadership or followership and an appreciation for one’s strengths and weaknesses individually and as a group. The question is, “Where are you now?” The development of these relationships may ease the transition into coalitions within a democratic school. Starratt (2011) outlines the workings of school coalitions;

> It is usually generated by bringing together of various individuals and groups who have different interests and desires (parents, teachers, custodians, coaches, counsellors, students, and administrators) around a compelling common effort, a purpose that touches upon their common humanity, their common needs, their common aspirations for achieving something out of the ordinary. (p. 83)

In response to school administrator and school superintendent requests and after reading Greenleaf (1977); Sergiovanni (1992); and Starratt (2011), the author initiated a journey of self-discovery within an individual school staff (35 members) and later with a school district of 410 teachers and principals with the following questions:
1. What is your greatest strength?
2. How have you used this strength in your daily life?
3. What is your greatest area of weakness?
4. How has the weakness caused you problems in the past?
5. Describe a situation where you were leader.
6. Describe a situation where you were follower.
7. Have you a preference? Leadership or followership? Explain your choice.
8. Describe a situation where you relied upon your moral and/or ethical leadership to deal with a difficult decision?
9. How do you prepare to make a decision?
10. How do you react if the decision turns out to be wrong?

Post activity discussion revealed the commonalities among them. Such a process provided early steps to learning about each other; to building stronger teams; to understanding the strengths within the group; and to understanding themselves and their values. For years the attention has been on school leadership and it now seems sensible that teachers understand the roles and the types of followers with whom they work each day. Working with school staff may provide occasion for the identification of the seven types of follower paths and related strengths (and areas that need attention). But, because not everyone is confident to speak within a group, hidden talents may remain undiscovered. Hence, opportunities for team members to share their background and demographics in short activities at staff meetings, professional development days, and retreats could channel the development of valuable relationships and a new understanding and appreciation for each other. At the outset, participants are reminded to say only what they are comfortable expressing and not to say what they do not want to share. It is useful for all school staff to become aware of the various ages and stages, strengths, challenges, and values of the members of their group. Such opportunities can strengthen the
connections that bind a school together (Author, 2010; Glickman, Gordon, & Ross Gordon, 2005).

Teachers, in particular, seldom have time for self-reflection. Questions that encourage respondents to “consider their individual sense of themselves, but also their sense of themselves as a community of educators, learners, and support staff” (Starratt, 2011, p. 67) promote reflective thought. According to Wheatley (2006), and I concur, it is important to tell our stories to each other which will reinforce personal connections in the school among each other. The opportunities for school members to participate in the ebb and flow of shared information and to develop greater understanding and appreciation for each other as leaders and followers will reinforce an atmosphere of transparency, trust, and authenticity within the school. A small sample of the feedback from the previous self-discovery questions included:

- A good leader must be a good follower and a good listener.
- Use your strengths to help rectify your weaknesses.
- Involve students in having leadership-followership roles in the classroom. Talk about them. How did they feel as a leader? How do they feel as a follower?
- Leaders and followers are both part of the whole puzzle that makes up our school.
- The importance of self-awareness, listening to others, sharing decision making, valuing dissonance.
- I can be myself and I have lots to offer my school community.
- The roles of leaders and followers constantly change.
To continually remind myself of students being on a continuum at the same time as I am.

Such responses seem to support the use of such activities and the investment of time in each other.

**Continuing to build relationships**

During a recent professional development day session, staff spent an hour, in pairs, working through questions to “get to know” each other. Wheatley (2005) believes that without “shared beliefs and desires, people are not motivated to seek out one another and develop relationships. Instead, they inhabit the same organizational and community space without weaving together mutually sustaining relationships” (p. 102). Some questions in a professional development session that focussed participants on understanding each other were suggested by Baron (2010):

> When you think of your life’s story and how it unfolded, what people, experiences, or events were critical to your development? (p. 28)

And,

> To recall these defining moments, take a walk through the stages of your life, from early childhood, to adolescence, to young adulthood, to the present moment. You could have experienced these defining moments as either strongly positive or difficult, even negative. What thought and memories come to mind? (p. 28)

When the entire staff reconvened, many commented on how much they enjoyed the experience and that they never have had time to engage in this type of deep conversation before. Most importantly, many found similarities in their life stories, a commonality and a comfort level. Within this sharing time, participants could identify when they were followers (and leaders) and why this was the case. Wheatley (2006) agrees, “In this
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world, the *basic building blocks* of life are relationships, not individual. Nothing exists on its own or has a final, fixed identity. We are all *bundles of potential*. Relationships evoke these potentials. We change as we meet different people or are in different circumstances” (p. 170). Also, Kelly (1992) stresses “nurturing and leveraging a web of organizational interrelationships” (p. 165). Further to this, Hollander (2009) indicates that effective leaders are aware of the needs and interests of their followers and that the dynamic of school staff interaction are critical.

Issues of listening, persuasion, partner inputs, and inclusivity of all school stakeholders with an overall recognition and appreciation for individual voice can nurture the entire school environment (Hayes & Comer, 2010; Hollander, 2009; Sergiovanni, 1992; and Starratt, 2011) so that everyone will feel valuable, capable, and responsible (Crippen, 2005). Chaleff (2009) explains, “Two essential elements of relationships are developing trust and then using that trust to speak honestly when appropriate; one without the other is meaningless” (p. 23). School staff “respond positively to leaders who are fair, show concern and get results…..humble behaviours along with authenticity result in trust and inspired followers” (Hayes & Comer, 2010, p.135).

**Followership Questionnaires**

Kelly (1992) developed a *Followership Questionnaire* (p. 90-97) to help people determine the kind of follower they are and to identify the strengths of the follower and areas that needed improvement. Independent thinking and actively carrying out one’s role were identified as critical to followership in the questionnaire. The brevity of this
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This paper does not allow for an in-depth explanation of each; nor, where they would fit on the leadership-followership continuum. This topic is fuel for another paper. But briefly, five categories of followership (Kelly, 1992, p. 97) were named:

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<th>Followership category</th>
<th>Independent Thinking</th>
<th>Active Engagement Score</th>
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<tr>
<td>1. Exemplary</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>2. Alienated</td>
<td>High</td>
<td>Low</td>
</tr>
<tr>
<td>3. Conformist</td>
<td>Low</td>
<td>High</td>
</tr>
<tr>
<td>4. Pragmatist</td>
<td>Middling</td>
<td>Middling</td>
</tr>
<tr>
<td>5. Passive</td>
<td>Low</td>
<td>Low</td>
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More recently, Barbara Kellerman (2008) of Harvard also identified five types of followers:

<table>
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<tr>
<th>Followership type</th>
<th>Description</th>
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<td>1. Isolates</td>
<td>Completely detached.</td>
</tr>
<tr>
<td>2. Bystanders</td>
<td>Observe, but do not participate.</td>
</tr>
<tr>
<td>3. Participants</td>
<td>Are in some way engaged.</td>
</tr>
<tr>
<td>4. Activist</td>
<td>Feels strongly about their leaders and acts accordingly.</td>
</tr>
<tr>
<td>5. Diehards</td>
<td>Prepared to die if necessary for their cause. (p. 85)</td>
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A comparison between Kelly and Kellerman’s lists reveals some overlap/replication/consistency of thought: (1) *Isolates* and *alienated* followers prefer not to be involved. (2) *Passives* and *bystanders* may simply watch from the periphery. (3) Also, *exemplary* followers align with both *activists* and *diehards* to some degree. (4) *Conformists* and *participants* get involved, but for each for different reasons. It seems to me that if the members of a school community have the chance to understand the
leadership-followership dynamic that exists in their school; it may promote inclusive, transparent, interaction for all members, an authenticity. Such clarity plays a part in the development of trust and loyalty, mentioned previously, to an organization or school (Hollander, 2009). The relationships within the school form a net of support for teacher, administrator, support staff, student and parent participants. If the relationships within the school are genuine, then the school community will also be so- there will be honesty and openness, a sense of trust and safety.

Conclusion:

Schools are all about relationships and relationships are developed, in part, through caring, listening, trust, honesty, and collaboration. They are about reaching out to each other; first, by trying to understand and being true to ourselves (authentic) and then by trying to understand and appreciate our colleagues. It’s about telling our stories and realizing how much we have in common and yet how rich we are in diversity. It’s about discussing our values and why we are where we are in our lives and in our schools. It’s about service to the common good. Relationships include leadership and followership and moving back and forth along the continuum. Over twenty-five years ago, Kelly (1988) described and made clear the importance of these two domains that resonate today:

People who are effective in the leader role have the vision to set corporate goals and strategies, the interpersonal skills to deliver consensus, the verbal capacity to communicate enthusiasm to large and diverse groups, the organizational talent to coordinate disparate efforts, and above all, the desire to lead. (p. 142)

And, those in a followership role,
Have the vision to see the forest and the trees, the social capacity to work well with others, the strength of character to flourish without heroic status, the moral and psychological balance to pursue personal and corporate goals, and above all, the desire to participate in team effort for the accomplishment of some greater common purpose. (p. 142)

Both are needed in our schools.

In summary, schools are places where leadership-followership succeeds and is mutually reinforced through webs of relationships. School staff interplay is strongly influenced by these types of followers and their support, resistance, or laissez-faire attitudes toward school goals/directions. Additional knowledge of the motivation and outcomes of each follower typology would provide valuable insights into the rationale for participant interaction and attainment of a democratic atmosphere. Opportunities for staff development exercises that enhance mutual understanding, identify strengths, and recognize areas for improvement, will help build teams and appreciation for diversity and commonalities.

The development of leaders and followers—formal and informal—in a school will create stability and harmony and make a difference where all voices are valued and supported by the web of relationships. It is time to give recognition and attention to followership and the role it plays in schools. This paper is a simple call for greater study into the area of followership.

Portions of this paper were previously published under the title, School followership: It’s time to pay notice.
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Resources


Kleiner, K. (2008). Rethinking leadership and followership: A student’s perspective. IN


Title: Cultural consultants in the classroom: Harnessing student mobility for intercultural learning

Summary: Study abroad programs are frequently seen as an ideal opportunity for students to improve their foreign language skills and gain cultural knowledge through immersion in another society. However, while abroad, students often find it surprisingly challenging to engage with local people and culture. This presentation discusses a pedagogical approach designed to harness student mobility for authentic learning that brings study abroad students and local students together for mutually beneficial intercultural learning.

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Abstract:

In the global effort for universities to internationalize, study abroad programs are seen as an ideal opportunity for students to improve their foreign language skills and gain direct cultural knowledge through immersion in another society. However, while abroad, students often find it challenging to engage with local people and culture. Barriers can include ways in which study abroad programs are tailored, sometimes as “island programs” designed exclusively for foreign students, study terms that conflict with the local academic year, and isolated dormitory accommodations. Despite being immersed in the target language and culture, a lack of opportunity or initiative to participate in authentic activities limits the learning potential of many study abroad students.

To maximize study abroad as a transformative learning experience for students, it is important for educators to recognize that engagement with local people and culture is not automatic and does not occur spontaneously. This presentation discusses a
pedagogical approach within the regular university curriculum designed to harness student mobility for authentic learning that brings study abroad students and local students together for mutually beneficial intercultural learning. In a cultural anthropology course, study abroad students served as “cultural consultants” sharing their life experiences and cultural knowledge with students studying their global region. This authorized role offered study abroad students authentic opportunities to practice speaking in their target language and to form relationships with local peers. Meanwhile, local students experienced an enriched classroom environment that brought foreign culture to life. In this way, each group of students provided an immediate, live, human cultural lens to facilitate the process of becoming acculturated to each other’s cultures, views, and perspectives. Moreover, collaborative learning helped each group build confidence to actively participate in authentic and meaningful topics of discussion, and a more culturally responsive classroom emerged in which students came to see themselves as being a part of a community of learners. Following a description of this particular course, the presenter will share ways in which a student-centered pedagogy with teaching strategies and activities designed to encourage active learning and intercultural engagement can be adapted across the university curricula for the benefit of students both at home and abroad.
Title: From ‘Lone Wolf’ Scholars to ‘Social’ Scientists: A Case Study in Graduate Student Advising

Summary:

What is the best way to mentor novice scholars? In the humanities and social sciences, graduate students have traditionally been advised through individual consultations, but this is rapidly giving way to the collaborative laboratory framework typical of the physical sciences. This presentation shares a case study of a graduate student mentoring group in the social sciences at a Research I state university in the Midwestern United States, describing the evolution of its shared community practices and the surprising effects of one advisor’s transition to enculturating ‘social’ science scholars.

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Abstract:

What is the best way to mentor novice scholars? Amid a changing landscape with increasingly diverse roads to graduate school and career paths afterwards, attention has turned to the issue of graduate advising – what needs to be learned and how best to accomplish it. On the one hand, new PhDs are increasingly finding careers outside academia, and since potential employers demand job-ready new hires, the means and extent to
which professional skills should be taught in doctoral programs is a topic of active discussion. On the other hand, efforts to make higher education more accessible has led to a more diverse graduate student population, with more first generation, minority and international students whose different cultures, languages and experiences lead to an opacity in the process of ‘doing graduate school’. How can graduate school requirements be communicated more concretely to ensure student success?

This presentation describes a case study of the graduate advising group of a mid-career social scientist at a Research I state university in the Midwestern United States. In her early career, this professor’s initial framework for mentoring graduate students was not group-based, nor was this approach common in her department. The presenter shares a case study that, through participant observation, document analysis and interviews with group members past and present as well as peripheral student participants who were not officially members of the group, examines the evolution of the community practices of the mentoring group, how members interpret and participate in this form of mentoring, and the cultural adjustments required of the advisor, her students, and her department of adopting this mentoring framework. Following a description of the case, the presenter concludes with the surprising effects and implications of this advisor’s decision to transition to enculturating ‘social’ science scholars.
Title: Cultural consultants in the classroom: Harnessing student mobility for intercultural learning

Summary: Study abroad programs are frequently seen as an ideal opportunity for students to improve their foreign language skills and gain cultural knowledge through immersion in another society. However, while abroad, students often find it surprisingly challenging to engage with local people and culture. This presentation discusses a pedagogical approach designed to harness student mobility for authentic learning that brings study abroad students and local students together for mutually beneficial intercultural learning.

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VIRTUAL SCHOOL TEACHER’S SCIENCE EFFICACY BELIEFS: THE EFFECTS OF COMMUNITY OF PRACTICE ON SCIENCE-TEACHING EFFICACY BELIEFS

A dissertation submitted in partial satisfaction of the requirements for the degree of Doctor of Education in Learning Technologies

by

Phuong Pham Uzoff

November, 2014

Paul Sparks, Ph.D. – Dissertation Chairperson
This dissertation, written by

Phuong Pham Uzoff

under the guidance of a Faculty Committee and approved by its members, has been submitted to and accepted by the Graduate Faculty in partial fulfillment of the requirements for the degree of

DOCTOR OF EDUCATION

Doctoral Committee:

Paul Sparks, Ph.D., Chairperson
Spring Cooke, Ed.D.
Vanessa Tolosa, Ph.D.
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ACKNOWLEDGEMENTS

This dissertation journey was one of the most challenging and rewarding experiences I’ve had to face. I would like to gratefully and sincerely thank the following people who have provided patience, guidance, and support throughout this journey:

- Dr. Paul Sparks, who was more than happy to act as my supervisor despite teaching a million other courses, flying to remote islands to study education practices, and other professional commitments. His wisdom, knowledge, sense of humor, and commitment to my success inspired and motivated me. Thank you for being super duper patient with me throughout the hiccups and speed bumps during journey!
- Dr. Vanessa Tolosa, who supports my goal of creating a better STEM world for our students. Her dedication to her practice, research, and drive is inspirational! She is a role model to children aspiring to become scientists. Thank you for being my friend and offering sound advice!
- Dr. Spring Cooke, who undertook the role as my committee member. Her support and guidance has enabled me to complete my journey. Thank you for taking your time out of your busy schedule to guide me to completion!
- Lupe, who provided me with a great group of teachers to study. She had faith in my work and provided enthusiasm throughout the journey. Thank you for being so positive and having such a great outlook in life!
- My friends and family, who provided the support, love, and laughter that I needed throughout this process.
- Odiesha, Tracy, Malika, and Damon, who were one of my top supporters and provided me with ventilation outlets for the ups and downs of this journey.
- Neighborhood Grinds, my second office and caffeine source that enabled me to keep my motor running!

Finally, and most importantly, I would like to thank my wonderful husband:

- Vladimir Uzoff, who is my number one fan! His support, love, encouragement, and patience have helped me stay afloat. His sound advice and tolerance for my swinging moods is testament in itself for his unyielding devotion and love. His brains, engineer mind, and systematic cognitive prowess motivate me to continue to pursue my higher education. Thank you for your love, being my rock, and supporting me through this journey. I don’t know how I would have survived without your unwavering love. You’re the best!

This dissertation is dedicated to Vladimir and to my “Phamily”.
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*Dissertation: Virtual School Teachers’ Science Efficacy Beliefs: The Effects of Community of Practice on Science-teaching efficacy Beliefs*
The purpose of this study was to examine how much K–12 science teachers working in a virtual school experience a community of practice and how that experience affects personal science-teaching efficacy and science-teaching outcome expectancy. The study was rooted in theoretical frameworks from Lave and Wenger’s (1991) community of practice and Bandura’s (1977) self-efficacy beliefs. The researcher used three surveys to examine schoolteachers’ experiences of a community of practice and science-teaching efficacy beliefs. The instrument combined Mangieri’s (2008) virtual teacher demographic survey, Riggs and Enochs (1990) Science-teaching efficacy Beliefs Instrument-A (STEBI-A), and Cadiz, Sawyer, and Griffith’s (2009) Experienced Community of Practice (eCoP) instrument.

The results showed a significant linear statistical relationship between the science teachers’ experiences of community of practice and personal science-teaching efficacy. In addition, the study found that there was also a significant linear statistical relationship between teachers’ community of practice experiences and science-teaching outcome expectancy. The results from this study were in line with numerous studies that have found teachers who are involved in a community of practice report higher science-teaching efficacy beliefs (Akerson, Cullen, & Hanson, 2009; Fazio, 2009; Lakshmanan, Heath, Perlmutter, & Elder, 2011; Liu, Lee, & Lin, 2010; Sinclair, Naizer, & Ledbetter, 2010). The researcher concluded that school leaders, policymakers, and researchers should increase professional learning opportunities that are grounded in social constructivist theoretical frameworks in order to increase teachers’ science efficacy.
Chapter One: Virtual School Teacher's Science Efficacy Beliefs

Effective execution of science education requires that teachers have a deep understanding of science content knowledge (National Research Council [NRC], 1996, 2000, 2007, 2011a, 2011b; Smith & Neale, 1989). However, studies have found that teachers are not fully prepared to implement the new content standards advocated in science education reform efforts (National Science Teachers Association, 2003). As a result, quality of instruction is poor because most teachers either avoid teaching science (Appleton, 2002, 2003; Hestenes, 2013; NRC, 2011b) or rely heavily on textbooks and worksheets (Appleton & Kindt, 2002; Davis, Petish & Smithey, 2006; NRC, 2011b). One promising approach to overcome teachers’ lack of content knowledge and therefore improve their teaching effectiveness is to involve them in a community of practice (Lave & Wenger, 1991). Studies have found that teachers who were participating in a community of practice reported better science content knowledge, higher teaching efficacy, and increased student achievement (Fulton & Britton, 2011; Lumpe, Czerniak, Haney, & Beltuykova, 2012; Sinclair, Naizer, & Ledbetter, 2010).

Problem Statement

Studies have found that teachers who participated in a community of practice in science-teaching reported having a better understanding of how to teach science-inquiry standards (Fazio, 2009; Goodnough, 2010). These studies indicate the need for school partnerships with science experts, collaborative learning, and learning continuity for teachers, but they do not examine how being a part of a community of practice affects self-efficacy of science teachers. Researchers have found that higher teaching efficacy leads to more effective science-teaching (Lumpe et al., 2012; Sinclair et al., 2010). However, there is limited research evaluating how
being a part of a community of practice affects science-teaching self-efficacy, and the little research that exists focuses on teachers in a traditional “brick and mortar” environment, so that there has been no evidence for the effectiveness of the community of practice within virtual learning environments. With the rapid growth of virtual schools, it is important to examine science-teaching efficacy beliefs as they pertain to teachers in virtual classrooms. Because teachers in these environments are held to the same teaching standards as traditional teachers, it would be beneficial to examine their experiences in their communities of practice and the effects these experiences have on their science-teaching efficacy beliefs. This study explores the relationship of community of practice on science-teaching efficacy and science-teaching outcome expectancy of K–12 teachers in virtual teaching environments, who can also be described as virtual teachers.

**Purpose Statement**

The purpose of this study is to examine the factors within a community of practice that affect science-teaching efficacy beliefs of virtual K–12 teachers. Cadiz, Sawyer, and Griffith’s (2009) Experienced Community Survey will be used to measure the extent to which a person experiences their community of practice. These factors are open communication, shared vocabulary, remembering previous lessons, and learning from each other (Cadiz et al., 2009). Riggs and Enochs’ (1990) Science Teaching Beliefs Instrument-A (STEBI-A) will be used to measure science-teaching efficacy beliefs. This study seeks to provide understanding of factors that can enhance the efficacy and expectancy of teachers in online classrooms within their science-teaching community of practice.
Background

For over 50 years, the United States has greatly benefited from innovations in science and engineering. These innovations have created jobs, powered the U.S. economy, raised the quality of living, and enabled the U.S. to become an international economic leader (Atkinson, 2012). However, Atkinson reports that the country’s global share in Science, Technology, Engineering, and Mathematics (STEM) industries is on the decline. Additionally, the global economy has increased its need for a STEM workforce (National Science Board [NSB], 2012). Although the U.S. has seen a steady growth in STEM professionals, it still lags behind Asian and European competitors (DeJarnette, 2012). In addition, the NSB (2010) reports that the number of students pursuing natural sciences and engineering degrees is decreasing. These fields are essential in today’s knowledge-intensive global economy; therefore, if the United States is to remain competitive within the global economy, education reformers need to focus on preparing future generations of students to become literate in science.

Science Reforms

With ever-increasing changes in the global economy and the need for science and engineering professionals, initiatives have been passed to mandate more attention to science education in American schools (DeJarnette, 2012). These initiatives include national and state education policies that focus on improving student learning in science. These policy goals aim to increase student achievement and raise the international ranking of U.S. students in science from the middle to the top in the next decade (NSB, 2012). In 2011, only one-third of eighth-grade students in the United States scored proficient or above in science (National Assessment of Educational Progress [NAEP], 2012). Although the United States leads the world in spending per pupil, that spending is not translating into high achievement in science (Peng & Guthrie, 2010).
According to Peng and Guthrie (2010), the average U.S. expenditures per student increased by 25% from 1995–2006. However, the increase in spending did not equate to a dramatic increase in NAEP scores, which only increased by 3 percent (NAEP, 2012). These less-than-desirable scores have been linked to a lack of quality in science instruction (NRC, 2007). While the United States is spending more money than ever on education, student achievement scores have not measured up; as a result, more scrutiny is being placed on educational spending and education reform (Peng & Guthrie, 2010). Reforms include the creation of Common Core Standards that will be implemented across states and efforts to strengthen the quality of science curricula, encourage students to take advanced courses, increase teacher quality, raise graduation requirements, and expand technology use in education (NSB, 2012). These reforms aim to improve student achievement, but teachers play a central role in whether they succeed because it is teachers who must implement any new national, state, or district standards (Garet, Porter, Desimone, Birman, & Yoon, 2001).

Virtual Schools

Teachers who offer their instruction virtually are equally responsible as teachers in brick-and-mortar schools to help implement reforms that can improve student achievement in science. In the 2012–2013 school year, there were 31 U.S. states with K–12 virtual schools (Watson, Murin, Vashaw, Gemin, & Rapp, 2011). The increase in virtual schools has given students learning opportunities that were not previously available to them. For example, virtual K–12 schools have given rural school districts access to NCLB-qualified teachers in courses districts had previously been unable to provide (Watson & Ryan, 2007). Although the learning environment may be different from that in traditional schools, virtual schools are still responsible to deliver the same Common Core standards to their students (Watson & Ryan, 2007). This
means that teachers in those schools are also held accountable to raise student science achievement just as teachers from traditional brick-and-mortar environments.

**Professional Development**

The federal policy commonly called No Child Left Behind (NCLB, 2001) was passed in an effort to improve the quality of education for students. Under NCLB (U.S. Department of Education, 2004), there has been an emphasis on school accountability, which heavily focuses on the role of teachers in student learning (Desimone, Porter, Garet, Yoon, & Birman, 2002; Lumpe et al., 2012; Sinclair et al., 2010). According to many researchers, the success of educational reform depends on teacher qualifications and effectiveness (Garet et al., 2001). As a result, teacher professional development has become a primary focus in educational reform efforts.

While most teachers support education reform, many are not fully prepared to implement teaching practices that require students to critically analyze and develop higher-order thinking skills (Borko, 2004; Cohen, 1990). Cohen suggests that teachers are trained to teach through the classic model of learning and memorizing, which does not require students to build a deeper understanding of the subject. If students are expected to become more analytical and better critical thinkers, teachers must be prepared to teach these high standards through professional development (National Board for Professional Teaching Standards, 1989, 2003).

**Science Efficacy Beliefs**

Studies show that traditional types of professional development for teachers are usually short-term and do not adequately prepare them for science inquiry learning and practice (Barber & Mourshed, 2007; Borko, 2004; Lumpe, 2007). However, professional development that was long-term and included hands-on experience, scientific experts, and master teachers was positively correlated with teacher content knowledge, teacher science efficacy, and the amount of
time teachers taught science (Lumpe et al., 2012; NRC, 1996). Furthermore, some researchers found that professional development that focused on changing teacher efficacy beliefs and attitudes was correlated with improved student learning (Czerniak, Lumpe, & Haney, 1999; Knapp, 2003; Lumpe et al., 2012; Sinclair et al., 2010).

Numerous studies have indicated that teachers’ feelings of self-efficacy can have a positive impact on their students’ achievement (Akerson & McDuffie, 2006; Brown, Brown, Reardon, & Merrill, 2011; Duschl, 2008; Sinclair et al., 2010). Science teachers with higher feelings of science-teaching efficacy are more likely to teach science, to incorporate science-teaching reform standards, and to help their students build a deeper understanding of science (Appleton, 2003). Furthermore, studies have found a strong correlation between the hours, over 100 hours, teachers spend participating in intense professional development and their teaching self-efficacy (Desimone, 2011; Garet et al., 2001; Lumpe et al., 2012). Consequently, there is a critical need to examine how professional development affects teachers’ beliefs, teaching practices, and student learning (Guskey & Passaro, 1994; Lumpe et al., 2012; NRC, 1996; Riggs & Enochs, 1990; Sinclair et al., 2010; Swafford, Jones, Thornton, Stump, & Miller, 1999).

Growing amounts of research stress the need to embed social constructivist-learning theories within professional development for teachers (Koch, 2005). Professional development techniques that are long-term, collaborative, and involve experts and peers are found to be highly effective for teacher learning and teacher self-efficacy (Fulton & Britton, 2011; Garet et al., 2001). These types of continual professional developments are best exemplified by Lave and Wenger’s (1991) concept of community of practice.
Research Questions

This proposed research study seeks to examine the extent of how participation in a community of practice in science education will affect the science-teaching efficacy of K–12 teachers who teach in a virtual environment. Experience of community of practice (eCoP) will be measured using the Cadiz et al. (2009) instrument. The eCoP instrument was developed to measure the “extent to which a person is engaged in his/her community of practice” (Cadiz et al., 2009). Following the American Psychological Association and National Council on Measure in Education, Cadiz and colleagues developed field-appropriate measures of experience in a community of practice. It has origins in Lave and Wenger’s (1991) concept of community of practice, which consists of people who share a common interest or profession with the goals of exchanging knowledge through open communication (Lave & Wenger, 1991).

Science-teaching efficacy will be measured by using Riggs and Enochs’ (1990) Science-teaching efficacy Beliefs Instrument-A (STEBI-A) instrument. The STEBI-A is a survey designed by Riggs and Enochs (1990) to measure the level of science-teaching efficacy of in-service science teachers. The instrument measures science-teaching efficacy beliefs through two subscales: Personal Science-Teaching Efficacy (PSTE) and Science-Teaching Outcome Expectancy (STOE). It has its theoretical framework in Bandura’s Self-Efficacy Social Cognitive (SESC) theory (Bandura, 1977) and Gibson and Dembo’s (1984) teacher efficacy scale.

The following research questions will be explored in the study:

R1: What is the relationship between experience of community of practice and personal science-teaching efficacy (PSTE)? Which dimensions of experience in community of practice have the greatest effect on PSTE?
R2: What is the relationship between experience of community of practice and science-teaching outcome expectancy (STOE)? Which dimensions of experience in community of practice have the greatest effect on STOE?

**Theoretical Framework**

The theoretical framework supporting teachers’ feelings of self-efficacy resulting in science-teaching efficacy improvement through community of practice is based in the theories of social learning.

According to Bandura’s (1997) psychological social cognitive theory, self-efficacy is “the belief in one’s capabilities to organize and execute the course of action required to manage prospective situations” (p. 2). Research supports the idea that self-efficacy plays a strong role in human behavior. Bandura (2000) writes:

Perceived efficacy plays a key role in human functioning because it affects behavior not only directly, but by its impact on other determinants such as goals and aspirations, outcome expectations, affective proclivities, and perception of impediments and opportunities in the social environment. (p. 73)

Furthermore, research has shown that students’ self-efficacy beliefs play a significant role in influencing their motivation and achievement (Bandura, 1997); in addition, researchers have discovered that teachers’ self-efficacy beliefs also play an important role in influencing outcomes for teachers and students (Ross, 1992).

The notion of knowing and learning through situated activities forms the basis for a community of practice in which a learner participates (Lave & Wenger, 1991). A community of practice consists of individuals who interact with one another in order to achieve the same goal. For this research, the community of practice consists of science teachers. Researchers have found
communities of practice that focus on teacher collaboration and continuity have a positive effect on teaching efficacy and student achievement (Akerson, Cullen, & Hanson, 2009; Fazio, 2009; Liu, Lee & Lin, 2010; Vescio, Ross, & Adams, 2008). Chase, Germundsen, Brownstein, and Distad (2001) found that teachers’ efficacy increased when they are involved in an active community of practice, which consists of new teachers, experienced teachers, administrators, mentors, and faculty teacher educators who meet to reflect on their practices on a regular basis. Ramey-Gassert, Shroyer, and Staver (1998) found that teachers’ personal science-teaching efficacy is influenced by their positive experiences with high-quality science courses, professional development, access to resources, and a supportive community of practice from peers and administrators. Consequently, developing science-teaching self-efficacy is an important goal for science education reform.

**Implications for Research**

Teachers who were involved in science community of practices report higher teaching efficacy (Knapp, 2003; Sinclair et al., 2010). In addition, research has found that higher teaching efficacy leads to more effective science-teaching and higher student achievement (Lumpe et al., 2012; Sinclair et al., 2010). The researcher is assuming that teachers in virtual settings share similar characteristics of a community of practice with teachers in traditional “brick and mortar” settings. Therefore, the study will provide insights about the community of practice and provide a springboard for further research on the community of practice for virtual schools. In addition, the study will seek to increase understanding of factors within a community of practice that affects science efficacy of virtual school teachers. The data will provide school districts, administrators, and stakeholders with instructional strategies to help them develop and maintain ongoing communities of practice to support K–12 teachers in virtual environments. Furthermore,
results from this study will offer potential benefits including improvements in science-teaching efficacy, student achievement, professional development and community of practice for in-service teachers, and ideas about development of better science-inquiry curricula.

**Summary of Methodology**

This study is a descriptive, correlational, quantitative, nonexperimental survey study. The purpose of this study is to determine if relationships exist between personal science-teaching efficacy and science-teaching outcome expectancy and the independent variables of experienced community of practice: (a) open communication, (b) shared vocabulary, (c) remembering from previous lessons, and (d) learning from each other (Cadiz et al., 2009). These variables are treated as ordinal variables and measured quantitatively with a Likert scale. Two dependent variables were measured by the STEBI-A: science-teaching efficacy beliefs and science-teaching outcome expectancy.

**Significance of Study**

This study is significant because it will provide insight into ways teacher science efficacy beliefs can be improved in order to improve STEM education reform measures. Furthermore, understanding how a science teacher experiences a community of practice can provide professional development opportunities to enhance science-teaching efficacy beliefs. “Enhancing the quality and quantity of K–12 STEM education is inextricably linked to the continued professional development of K–12 teachers,” according to Nadelson, Seifert, Moll, and Coats (2012, p. 69). While it is important to focus on students’ science content knowledge, it is just as vital to focus on teachers’ knowledge and pedagogy in science-teaching.

According to Nadelson et al. (2012), schools often lack teachers with the knowledge and expertise to teach science effectively. Furthermore, teachers lack the professional support,
systems, and tools to fully implement science-focused lessons. Without the proper professional
development and knowledge building, how will teachers inspire students to become competitive
in the STEM global workforce? In addition, as virtual schools continue to proliferate in the
United States, it is imperative that more research should be done on what policies and practices
support teaching effectiveness for these schools. Therefore, focusing on improving teachers’
professional development opportunities may be beneficial in improving U. S. global
competitiveness and improving national prosperity (Nadelson et al., 2012). According to
Nadelson, et al,

The importance of STEM education to societal developments provides justification for
assuring K–12 teachers are prepared to teach the related content. Inservice teacher
professional development is critical to achieving the goal of enhanced student knowledge
of STEM. (Nadelson et al., 2012, p. 69)

The success of science education reforms depends on teacher qualification, effectiveness,
and teaching efficacy (Garet et al., 2001) for both traditional and virtual school teachers.

Limitations

The present study has several limitations. First, the participant population was gained
through a sample of convenience. Because the sample consists of schoolteachers in virtual
settings, the study’s findings cannot be generalized to the entire population of science teachers.
Other science teachers in both virtual and traditional settings may have different responses.
Second, the present research is only examining correlations between variables; therefore data
will not identify causation. Third, self-reporting can be problematic as there may be social
desirability bias. However, surveys are efficient and cost-effective in data collection for a large
population (Babbie, 1998); furthermore, the instruments have demonstrated reliability and
validity. Finally, the measures for experience of community of practice are relatively new; therefore, repeated studies utilizing the measures are recommended.

**Definitions of Terms**

The following terms and definitions are relevant to the topic being studied here.

*Personal science-teaching efficacy beliefs:* the confidence a science teacher has in his/her ability to successfully teach science.

*Science-teaching outcome expectancy:* the belief a science teacher has that effective science-teaching will influence his/her students.

*Self-efficacy:* the measure of one’s own confidence in completing a task and reaching a specific goal.

*Virtual schools:* A form of distance education that delivers online courses or classes that cater to K–12 grade levels.

*Virtual teachers:* Teachers who teach at virtual schools.

**Summary**

In this chapter, I have shown the lack of research exploring the relationship between community of practice for science teachers in virtual schools and their science-teaching efficacy and science outcome expectations. I have presented background regarding the national need for science education reform and the relationship between professional development and the effectiveness of science teachers. Furthermore, I have provided the purpose of the study, which is to examine the extent of how virtual K–12 teachers’ experience with a community of practice in science education can affect science-teaching efficacy. In addition, I have included the research questions:
R1: What is the relationship between experience of community of practice and personal science-teaching efficacy (PSTE)? Which dimensions of experience in community of practice have the greatest effect on PSTE?

R2: What is the relationship between experience of community of practice and science-teaching outcome expectancy (STOE)? Which dimensions of experience in community of practice have the greatest effect on STOE?

Finally, three limitations have been addressed: sample of convenience, the correlational data, and self-reporting of participants.

The following chapter will be a review of literature that addresses the science education reform movement in the United States and theoretical framework for this study: community of practice, self-efficacy, and science-teaching efficacy beliefs. Chapter 3 will examine this project’s methodology. Chapter 4 will provide the results, and Chapter 5 will provide a summary of the project.
Chapter Two: Literature Review

This study will examine the relationship between community of practice and science-teaching efficacy beliefs of teachers in K–12 online schools. This chapter will address the science education reform movement in the United States, which includes science inquiry instruction and science literacy. The theoretical framework for this study will focus on teachers’ community of practice, self-efficacy, and science-teaching efficacy beliefs. The review of literature will examine options for improved professional learning opportunities and development that could affect science-teaching efficacy beliefs. Lastly, this chapter will provide a brief background of virtual K–12 online schools and the need to examine the science-teaching efficacy beliefs of teachers in those schools.

Background

Many national, state, and local policymakers and educators have introduced education reform policies (Garet et al., 2001) in response to recent measurements showing low student achievement in the United States (NAEP, 2006). These education reforms include implementing higher educational standards, developing common core curriculum standards and frameworks, and using standardized testing to develop and measure advanced thinking and problem-solving skills among students (National Commission on Teaching and America’s Future, 1996). While these reforms aim to improve student achievement, teachers play a central role in the success of executing education reform because they must carry out the demands of state and district standards (Cuban, 1990). Federal policy such as the legislation commonly called No Child Left Behind or NCLB (2001) was passed in an effort to improve the quality of education for students (U.S. Department of Education, 2004). Under NCLB, there has been an emphasis on school accountability, which emphasizes the role of teachers in student learning (Desimone et al., 2002;
Sinclair et al., 2010). The success of educational reform depends on teacher qualifications and effectiveness (Garet et al., 2001). As a result, teacher professional development has become a primary focus in the educational reform efforts.

While most teachers support education reform, many are not fully prepared to implement teaching practices that require students to critically analyze and develop higher-order thinking skills (Borko, 2004; Cohen, 1990; Hestenes, 2013). Cohen suggests this is because teachers have been trained to teach through the classic model of learning and memorizing, which does not require students to build a deeper understanding of the subject. If students are expected to become more analytical and critical thinkers, teachers must receive professional development to prepare them to help their students attain these higher standards (National Board for Professional Teaching Standards, 1989, 2003).

**Science Education Reform**

Due to our global economy’s heavy reliance on technology, there is a higher demand for people who can solve complex problems and understand science and technology (Brown et al., 2011). In order to meet these demands, reform in science education is necessary (Brown et al., 2011). Research shows that students are not gaining science literacy at school (Cohen, 1990). In order for students to become more science literate, reforms must be made that will incorporate science inquiry teaching into the curriculum. Science inquiry teaching involves active learning strategies that engage students in the scientific process (NRC, 1996). Researchers have found that science inquiry teaching has been effective in building science literacy in students (Brown et al., 2011; Dani & Koenig, 2008; NRC, 1996).

The science reform movement for standards-based education began in the 1990s. Rutherford and Algren (1989) provided a foundation for high quality science education. The
reform movement focuses not only on science but on education as a whole, advocating for high standards to develop students as critical thinkers who are capable of solving complex problems and applying abstract knowledge to real-world problems (NRC, 1996).

In order for students to gain scientific knowledge and critical-thinking abilities, teachers must actively implement science inquiry instruction. Science inquiry-based instruction shifts from the traditional use of textbooks and lectures to a more student-centered approach where students engage in “doing science” (Von Secker & Lissitz, 1999). The ultimate goal for science reform is to encourage students to become more proficient in utilizing scientific strategies to logically solve problems and to verbalize and discuss their findings. In order for this goal to be achieved, teachers need to feel confident that their teaching practices can enable the scientific method to naturally transpire in the classroom.

Science inquiry. The NRC (1996) states that scientific inquiry involves studying the natural world in a diverse way and proposing hypotheses based on the evidence derived from observations. The science inquiry process requires student to develop knowledge and understanding of the natural world, as well as an understanding of how scientists examine the natural world (NRC, 1996). When practicing the scientific inquiry process, teachers and students are expected to:

• Think critically, plan, and conduct scientific investigations in context.
• Gather and interpret data based on observations.
• Discuss their hypotheses, ideas, observations, and conclusions.
• Use diverse tools of science, mathematics, and technology to support their scientific investigations. (NRC, 1996)
Science inquiry-oriented instruction engages students in some manner such as asking questions, hypothesizing, generating, interpreting, and evaluating data (NRC, 1996). During science inquiry instruction, teachers help their students learn through the scientific method rather than transmitting information through lectures or from reading books (Marshall, Horton, Igo, & Switzer, 2009). In this way, students are “doing science” and developing science literacy, which is the foundation of K–12 science education reform (Duschl, Schweingruber, & Shouse, 2007). Evidence has indicated that science inquiry instruction has significantly increased student science literacy (Judson & Sawada, 2000), although teachers find the new processes challenging to implement.

**Science literacy.** Science education reforms use Rutherford and Algren’s (1989) outline in *Science for All Americans* as a foundation to build scientific teaching strategies (Liang & Gabel, 2005). Scientific teaching breaks away from the traditional form of teacher-centered teaching to a more student-centered approach; it encourages students to use the scientific method as they actively engage building their science literacy (Dani & Koenig, 2008). Due to the national goal that all students must become science literate, The National Research Council established National Science Education Standards (NSES) in 1996. These standards were formed to guarantee that American students who have all the necessary resources and instructional tools achieve the national goal of scientific literacy.

According to NRC (1996) scientific literacy requires students to understand and process scientific concepts so that they can make personal decisions in civic and culture affairs and use their knowledge to aid the economy. Scientific literacy involves students having the ability to identify scientific issues as they pertain to local and national level political issues. Furthermore, students who are literate in science are able to ask questions and establish hypotheses based on
their curiosity. The NRC (1996) stresses the need for teachers to utilize as many science-inquiry standards as possible in order to develop the understanding of science literacy in order to meet the demands of a complex global society.

**Professional Development**

The education reform movement acquired national attention, which led to the push to implement more standards-based instruction in public schools. The NCLB legislation set ambitious goals to raise student achievement (Borko, 2004). Borko adds that although there are numerous factors that contribute to education reform goals, the ultimate changes in the classroom rely heavily on teachers.

As a result, school districts and administrators are placing more focus on teacher professional development and teacher learning (Desimone et al., 2002; Lakshmanan, Heath, Perlmutter, & Elder, 2011; Lumpe et al., 2012; Smith & Desimone, 2003). Professional development is a crucial component in the reform effort (Garet, et al., 2001; Moore & Esselman, 1992). As mentioned in the previous chapter, STEM reform goals are to enable our students to become competitive in the future global economy. Unfortunately, studies have found that teachers are not adequately trained in teaching science-inquiry standards (Akerson & McDuffie, 2006; Brown et al., 2011; Duschl, 2008; Sinclair et al., 2010). Studies have found a strong correlation between the hours, over 100 hours, teachers spend participating in intense professional development and teaching self-efficacy (Desimone, 2011; Garet et al., 2001; Lumpe et al., 2012). Consequently, there is a critical need to examine how professional development methods affect teachers’ beliefs, their teaching practices, and student learning (Guskey & Passaro, 1994; Lumpe et al., 2012; NRC, 1996; Riggs & Enochs, 1990; Sinclair et al., 2010; Swafford et al., 1999). The primary goal of this study is to examine the effects of participation in
a community of practice (Lave & Wenger, 1991) on teachers’ efficacy and teachers’ science efficacy.

**Science professional development.** In recent years, the definition of science education has been modified (Hodson, 1998; NRC, 1996). Science education has shifted from focusing on student acquisition and memorization of technical concepts and science terminology to emphasize critical thinking skills, inquiry processes, reasoning processes, and application of scientific concepts and skills (Hand & Prain, 2006). While these science inquiry standards must apply to all K–12 students, most teachers in K–6 are not fully prepared to teach the science inquiry methods or curriculum (NRC, 1996). Most elementary teachers are usually “generalists” (Darling-Hammond, 1999); they do not have a teaching specialty, nor were they trained to teach science content or pedagogy. Akerson and McDuffie (2006) add that since the primary subject taught to younger students is literacy, K–6 teachers usually are not science specialists but literacy specialists. Elementary school teachers often avoid teaching science because they lack confidence in their ability to teach science well (Brown et al., 2011; Epstein & Miller, 2011; Moreno, 1999).

Although the National Commission on Science and Mathematics Teaching for the 21\textsuperscript{st} Century (2000) provided recommendations to support elementary teachers through professional development in science-teaching, the recommendations do not fully prepare teachers for science instruction (Akerson & McDuffie, 2006). Moreno (1999) adds that while science professional development is offered to teachers, what is offered rarely fully prepares teachers to implement science inquiry-based curriculum. Teachers usually receive materials or textbooks for the use of science instruction but receive no guidance for effectively executing science lessons. Because
they often lack science background knowledge and science-teaching preparation, many K–6 teachers are not prepared to teach science effectively. Sinclair et al. (2010) assert:

This inadequate content knowledge causes lack of confidence in their ability to teach science. This lack of confidence, coupled with the need for students to perform well on high stakes testing in science, has led to an increase in requests for science professional development programs for elementary teachers. (p. 580)

Akerson and McDuffie (2006) add that professional development generally focuses on helping teachers to use certain materials. While the development can help teachers learn how to use the teaching materials effectively, not all materials, curricula, and strategies are equally effective for all students (Abell & Roth, 1992; Akerson & McDuffie, 2006; Sinclair et al., 2010).

Traditional professional developments are short-term workshops, which are often found to be inadequate in teacher learning and practice (Barber & Mourshed, 2007; Borko, 2004; Lumpe, 2007). Studies have found that long-term professional development that includes hands-on experience, scientific experts, master teachers, and experiential application has been positively correlated with teacher content knowledge, teacher science efficacy, and time spent teaching science (Lumpe et al., 2012; NRC, 1996). Furthermore, while studies found a connection between teacher professional development and student learning (Yoon, Duncan, Lee, Scarloss, & Shapely, 2007), some researchers have found that effective professional development includes an effort to change teacher beliefs and attitudes in order to improve student achievement (Czerniak et al., 1999; Knapp, 2003; Lumpe et al., 2012; Sinclair et al., 2010). Pajares (1992) found that there is a positive relationship between teachers’ beliefs and their instructional practices. In addition, the focus on teachers’ beliefs and attitudes is pertinent to
the success of science education reforms (Lakshmanan et al., 2011; Lumpe et al., 2012; Sinclair et al., 2010).

While it is important to provide instruction for teaching content and inquiry processes to teachers (Akerson & McDuffie, 2006), it is just as vital to change teacher beliefs and attitudes in order to improve student achievement. Studies have found that there is a positive correlation between teaching self-efficacy beliefs, teacher effectiveness, and student achievement (Bruce, Esmonde, Ross, Dookie, & Beatty, 2010; Ramey-Gassert, Shroyer, & Stayer, 1998). More recent studies have consistently supported teacher efficacy and student growth (Goddard, Hoy, & Hoy, 2004; Lumpe et al., 2012). Furthermore, Berman, McLaughlin, Bass, Pauly, and Zellman (1977) found that reported higher teaching self-efficacy beliefs were positively related to student achievement and teachers’ willingness to continue to effectively implement federally funded projects.

**Self-Efficacy**

Self-efficacy plays an essential role in the thought processes and emotions that empower goal-oriented actions (Tschannen-Moran & McMaster, 2009). Self-efficacy is the level of confidence a person has in achieving future goals (Bandura, 1977). The concept of self-efficacy evolved from Bandura’s (1977) social cognitive theory. According to Bandura’s (1997) social learning theory, self-efficacy is a psychological construct that refers to one’s own ability to successfully complete a specific task. Bandura (1977) further adds that self-efficacy is one’s own perceived competence to form and complete the actions required to produce a given goal. Within Bandura’s social cognitive theory, a triadic relationship between a person’s behavior, environmental events, and personal factors work together to explain human functioning (Lumpe et al., 2012). Pajares (1992) suggests that a person can change their behavior
by targeting one or all three of these factors. Consequently, self-efficacy can be manipulated and changed in suitable circumstances (Bandura, 1997).

In order to influence self-efficacy, it is important to understand that self-efficacy involves two subscales, personal expectancy beliefs and outcome expectancy beliefs, that serve as a predictor for behaviors. Personal expectancy beliefs measure one’s belief in his or her capabilities to achieve an anticipated outcome, while outcome expectancy is one’s beliefs that a certain behavior will result in a specified outcome (Bandura, 1997). Bandura (1997) states that an individual with high personal expectancy beliefs and outcome expectancy is likely to be more resilient during challenging efforts in order to reach the desired goal, while individuals who were low on both scales are more likely to give up if they do not easily reach their desired outcome. Therefore, behavior can be predicted utilizing the two subscales of self-efficacy, and the appropriate factors could be utilized to influence self-efficacy (Bandura, 1977).

Because self-efficacy affects human behavior, it is important to understand how self-efficacy beliefs are developed (Tschannen-Moran & McMaster, 2009). Bandura (1977) defined four strategies for developing self-efficacy: mastery experience, vicarious experience, social and verbal persuasion, and physical and emotional states. Because mastery experience is more direct, it is the most influential strategy for developing self-efficacy. For example, when a person masters a task, that individual gains self-efficacy; on the contrary, when a person fails a task, self-efficacy is lowered (Bandura, 1977). Vicarious experiences are less direct because they occur when a person observes someone modeling a certain task. If the model is successful, self-efficacy may increase; however, if the model is unsuccessful, self-efficacy may decrease (Tschannen-Moran, Hoy, & Hoy, 1998). Social and verbal persuasion occurs when an individual receives encouragement, affirmation, or praise. In effect, the social and verbal persuasion can
encourage the person to continue to spend more energy and effort to achieve a goal. The final factor affecting self-efficacy is found in the physical or emotional states that occur synchronously when a person is performing a task. For example, if the individual is excited and positive about the task, self-efficacy increases. However, if an individual experiences anxiety and is uncomfortable, self-efficacy may be lowered (Goddard, Hoy, & Hoy, 2004).

If the two subscales of self-efficacy are determined, an individual’s behavior can be predicted and appropriate strategies can be applied to improve self-efficacy, thus increasing the chance an individual will continue efforts to reach the desired outcome. In connecting the two subscales for influencing teachers’ self-efficacy, Tschannen-Moran and McMaster (2009) found professional development that focuses on master experiences with follow-up coaching had a positive effect on teacher self-efficacy. When teachers reported higher self-efficacy, they were more likely to implement new teaching strategies (Tschannen-Moran & McMaster. 2009).

Ross and Bruce (2007) found that teachers who participated in vicarious experiences had an increase in teacher efficacy beliefs. Furthermore, Lakshmanan et al. (2011) report that teachers who attended monthly professional developments that incorporated best practices for executing standards-based instruction, trainings in reflective cognitive coaching, and discussions on implementation of standards of strategies reported having a significant increase in self-efficacy. Additional studies demonstrate the importance of teacher collaboration and community of practice on teacher self-efficacy (Bruce et al., 2010; Sinclair et al., 2010).

In connecting these four strategies to science teacher efficacy, professional development should be focused on both science curricula content and building science-teaching self-efficacy. As mentioned earlier, teachers generally are not confident in teaching science-inquiry curriculum and, as a result, are avoiding teaching science (Brown et al., 2011; Epstein & Miller, 2011). If
the United States is to become competitive in the STEM global workforce, stakeholders and school leaders must shift traditional professional development from focusing primarily on curricula and handing out materials to enhancing teacher’s science knowledge and self-efficacy.

**Teacher Self-Efficacy**

In recent years, education reform has called attention to teaching self-efficacy (Lumpe et al., 2012). Bandura (1997) indicated that teacher self-efficacy beliefs influence student achievement and motivation. Researchers found that teachers’ self-efficacy beliefs positively affect teachers’ attitudes and beliefs about teaching and instructional behaviors (Gibson & Dembo, 1984; Skaalvik & Skaalvik, 2007; Tschannen-Moran & Hoy, 2001). On the other hand, teachers with low self-efficacy beliefs struggle more in teaching, are more stressed, and have lower job satisfaction (Betoret, 2006).

With the recent call for educational reform, there has been increasing interest in current conditions in schools, specifically on the school climate, student achievement, school leadership, teacher learning, teacher beliefs and attitudes, teacher development, and teacher efficacy (Fulton & Britton, 2011; Lumpe et al., 2012; Soodak & Podell, 1997). Two Rand Corporation evaluation studies first conceptualized teacher efficacy based on Bandura’s (1977) work. The Rand evaluation of 100 Title III Elementary and Secondary Education Act (ESEA) found that teacher efficacy was positively related to student achievement (Berman et al., 1977). Ashton and Webb (1986) found a significant relationship between teacher efficacy and student achievement on standardized testing in math and reading. Teacher efficacy is the belief of teachers in their ability to affect student outcome (Lakshmanan et al., 2011). Teacher efficacy has been identified as a factor that most consistently relates to teaching and learning and has been associated with student achievement, engagement, motivation, and students’ self-efficacy beliefs (Anderson, Greene, &
Loewen, 1988; Ross, 1992; Soodak & Podell, 1997; Tschannen-Moran & McMaster, 2009).
Furthermore, there is a growing body of empirical evidence that supports Bandura’s (1977) theory that teachers’ self-efficacy beliefs are related to teaching efforts, goal setting, persistence when lessons do not go as planned, and resiliency during challenging situations (Ashton & Webb, 1986; Guskey, 1986; Haney, Wang, Keil, & Zoffel, 2007; Tschannen-Moran & McMaster, 2009).

Researchers have found that there are positive effects of high teacher efficacy on instructional practices (Ross, 1998). Teachers with high self-efficacy were more likely to implement new strategies than were teachers with low self-efficacy (Ross & Bruce, 2007; Tschannen-Moran & McMaster, 2009), more willing to adopt new instructional tools in the classroom (Guskey, 1988; Ross, 1994), more willing to try new teaching ideas (Ross, 1998), and more willing to set higher goals and expectations in the classroom (Angle & Moseley, 2009).

Teachers with higher self-efficacy were more willing to change their behavior in order to adapt to new instructional programs intended to increase classroom effectiveness (Smylie, 1988). In addition, teachers with high teaching self-efficacy are more open to taking risks in the execution of difficult practices and are more comfortable with facilitating student learning (Ross, 1998). Gibson and Dembo (1984) found that teachers who had higher self-efficacy were more enthusiastic, reported lower stress levels, and were more satisfied with their teaching job. Finson, Riggs, and Jesunathadas (2000) found that teachers with higher self-efficacy spent more time teaching science, used more innovative and challenging teaching methods, and were more effective in teaching science.
Science-Teaching Self-Efficacy

The NRC (2007) reports that elementary education teacher certification and credentialing requires teacher candidates to complete only two college-level science courses, which many believe is not an adequate preparation for teaching science curriculum (Bradbury, 2010; Fulp, 2002). A recent report on teacher quality conducted over the last 20 years reveals a positive relationship between teachers who majored in science and student achievement (Kuenzi, 2008). However, only 2% of elementary teachers, 27% of middle school teachers, and 52% of high school teachers possess a degree in science or science education (Aud et al., 2012). Which means that many U. S. science teachers are not truly qualified to teach the subject (Kuenzi, 2008). In addition, there is a dramatic difference in teacher confidence to teach science compared to other school subjects. According to Fulp (2002):

It is clear that elementary school teachers do not feel equally qualified to teach all academic subjects, with preparedness to teach science paling in comparison to mathematics, language arts, and social studies. Where fewer than 3 in 10 elementary teachers reported feeling well prepared to teach the sciences, 77 percent indicated that they were very well qualified to teach reading/language arts. (p. 14)

As mentioned in the previous section, teachers who do not feel qualified to teach science are less likely to spend much time teaching science in the classroom (Fulton & Britton, 2011). In order to build science-teaching qualifications and confidence, professional development methods have been created to boost teacher learning through innovative, inquiry-based instruction (Lakshmanan et al., 2011). Insufficient science content knowledge also may lower teacher self-efficacy (Swarz & Dooley, 2010), thus highlighting the important of professional development techniques that focus on building content, pedagogical, and social cognitive components.
Riggs and Enochs (1990) contend that although science is required for all students in elementary schools, elementary teachers do not place high priority on teaching science; as a result, students are not receiving the high-quality science education they deserve. They suggested that many teachers are ineffectively teaching science because they have low levels of science-teaching efficacy. Therefore, it is imperative to determine science-teaching efficacy in order to contribute to reform movements in science achievement.

Yoon et al. (2006) found that science teachers’ self-efficacy had a strong influence on their ability to successfully implement new science curriculum and choose the best instructional practice for effective teaching. In addition, teachers with low self-efficacy stemming from lack of science subject-matter knowledge were more likely to teach as little science as possible and to rely heavily on textbooks, science kits, and experts (Harlen & Holroyd, 1997). Appleton (2003) found that as many elementary school teachers have difficulties teaching science they tend to avoid the subject. Some teachers use “token” science content in reading and social studies, and some teach based on their limited science knowledge. Furthermore, teachers with low self-efficacy in science were more likely to give up on students who have difficulties, criticize students who do not understand the material, ignore subject misconceptions, or move on without reteaching the lesson using a more comprehensible approach for their students (Bandura, 1993).

By contrast, teachers with high self-efficacy were more comfortable using instructional strategies that enhanced student learning (Woolfolk & Hoy, 1990) and to ask more open-ended questions that allowed their students to utilize higher-order problem-solving skills (Mulholland & Wallace, 2001). Teachers with high self-efficacy were more supportive in providing learning experiences for their students, open to reflect on their teaching practices, willing to reteach lessons that did not run smoothly, and more accessible to student inquiries (Schunk, 1991).
Studies have found that low teaching efficacy can affect how teachers view their capability to teach students (Bandura, 1993; Schunk, 1991; Woolfolk & Hoy, 1990). It is, therefore imperative that teachers continue training and learning through science professional development (NRC, 2007). In order to bridge the gap associated with underprepared teachers, professional development in science and STEM is critical for teachers to become more effective in meeting the needs of their students. Science professional development should focus on building teacher efficacy and practices, which will have a positive impact on student achievement (Gibson & Dembo, 1984; Goddard & Goddard, 2001; Moore & Esselman, 1992; Ross, 1992).

Ramey-Gassert et al. (1998) found that there is a positive correlation between a teacher’s science self-efficacy and attitude toward science choosing to teach science and self-rated effectiveness in science-teaching. Teachers with higher science self-efficacy were more likely to teach the mandated hours of science to their students, while teachers with lower self-efficacy were more likely to avoid teaching science (NRC, 2007). If teachers are not teaching science, how will students learn and achieve? Professional development needs to be able to accommodate those teachers who lack science knowledge as well as teachers who are proficient in teaching science. Researchers suggest that professional development that focuses on social constructivist learning can enhance teachers’ learning and build their self-efficacy (Guskey & Yoon, 2009; Liang & Gabel, 2005).

**Social Constructivist Theory**

There has been extensive research on the concept of learning–situated social interactions and practices (Bruner, 1990; Dewey, 1933; Lewin, 1946; Vygotsky, 1978). The traditional view of learning as an internal cognitive function has shifted to see knowing and learning as concepts
of context, culture, situated activities, and practice (Bruner, 1990; Lave, 1988; Lave & Wenger, 1991). Thus, popular frameworks of situated learning have been integrated into learning interventions (Tinker & Krajcik, 2001) and provided a foundation to implement improvements in teaching. More importantly, situated learning has been recommended as an effective method for teacher learning (Guskey & Yoon, 2009; Yoon et al., 2007).

Traditionally, professional development methods have focused on a top-down approach to delivering teacher learning (Bruce et al., 2010; Guskey & Yoon, 2009). These professional development techniques lack learning continuity, are disconnected from teachers’ daily practices, fail to promote collaboration, and do not take into account that teachers are adult learners (Darling-Hammond, 2005; Guskey & Yoon, 2009). This traditional method of executing professional development has been deemed ineffective (Bruce et al., 2010; Yoon et al., 2007). In a large-scale analysis conducted by Regional Education Laboratory-Southwest (RELS), 1,300 studies were examined on the effectiveness of teachers’ professional development on student outcomes (Yoon et al., 2007). The RELS study found that only 9 of the 1,343 schools studied met the 2001 NCLB Act’s criteria for rigorous standards and that these nine schools utilized experts who were able to align theory and practice, maintain teacher collaboration, support peer and expert coaching, and reinforce learning continuity. The RELS study therefore recommended that professional development should utilize strategies employed by these nine schools as a model for effective teacher learning (Yoon et al., 2007).

If teachers are expected to provide rigorous science inquiry standards to their students, professional development should be designed to support teachers as learners. In considering effective professional development, Bruce et al. (2010) stress that teachers should be a part of a sustained, collaborative, professional learning community. In analyzing two school districts in
Ontario, Bruce and colleagues found the school district that offered sustained professional learning communities reported higher teaching efficacy and higher student achievement compared to the second school district that utilized the traditional model for professional development. Professional development methods that considered teachers as adult learners were reported to be more effective and have a positive effect on student achievement (Bruce et al., 2010; Guskey & Yoon, 2009; Webster-Wright, 2009).

Current research stresses the need to embed social constructivist-learning theories within professional development methods (Koch, 2005). Professional development that encourages continual collaboration among experts and peers are found to be highly effective on teacher learning and teacher self-efficacy (Fulton & Britton, 2011; Garet et al., 2001). The social nature of learning is best exemplified by Lave and Wenger’s (1991) situated learning theory, which posits that learning is the process of participation through social interactions. Wenger (1998) further broadens the concept of situated learning as being a part of a community of practice (CoP). Lave and Wenger (1991) suggest that a learner enters a community from the periphery and comes closer to the center through social interactions with existing members, which enables full, legitimate participation. Through legitimate participation, the learner gains knowledge and customs from the CoP and identifies herself as being a member of the community. A person can be a member of many CoPs, whether at work, in professional learning communities, schools, or other social groups (Lave & Wenger, 1991).

**Community of Practice**

There has been much interest in supporting and overlapping the concept of CoP since Lave and Wenger’s (1991) publication, including the ideas of a professional learning community, a community of learners, a learning community, a community of inquiry, and
community knowledge, just to list a few (Hung & Yuen, 2010). These conceptual models stem from or extend the concept of CoP, and they all share the supposition that social interaction and participation are fundamental to how people learn and become members of a community (Lave & Wenger, 1991). A CoP embodies language, artifacts, tools, beliefs, norms, and behaviors. A newcomer becomes a participant within a community of practice through mutual engagement and social interactions. These social interactions involve the exchange of knowledge between members through mutual engagement such as talking or teaching one another (Lave & Wenger, 1991). For the purpose of this study, the term *communities of practice* will be used interchangeably with *professional learning communities*.

There have been few studies that investigate teacher learning and teacher self-efficacy as they relate to being a part of a science-teaching CoP (Fazio, 2009; Lakshmanan et al., 2011; Liu et al., 2010; Sinclair et al., 2010). Lakshmanan et al. (2011) found that there was a positive correlation between teacher self-efficacy and instructional practices for teachers who participated in a professional learning community. Webster-Wright (2009) reviewed over 200 studies in professional development and professional learning and found that professional development needs to provide learning in context and offer continuity. They further add that professionals learn from practice and that knowledge is gained through this practice.

In their research, Lave and Wenger (1991) challenged the traditional view that learning is the transmission of abstract and decontextualized knowledge from one person to another. Instead, they introduced a theory for learning as being part of social interactions and critical concepts such as situated learning, CoP, and legitimate peripheral participation.

**Situated learning.** Studies have found that professional development sessions most often focus on distribution of science material and resources without providing social interaction
connected to science inquiry practices and thus have been ineffective for teacher learning (Appleton & Kindt, 1999) and enhancing teaching self-efficacy (Akerson & McDuffie, 2006). Lave and Wenger (1991) argue that learning does not transpire in isolation and that a person learns from socially interacting with others—a CoP—who are attempting to obtain the same skills or knowledge. In addition to social interaction, Lave and Wenger contend that people learn best when they are given an appropriate context for learning. For example, a teacher wanting to learn how to implement a new science inquiry process may start by reading the teacher guide on science inquiry. This learning process is decontextualized and abstract. In order for her to become a more competent teacher in science, she attends professional development sessions in the science-teaching community. In this new CoP, the members share the same goal, which is to become a more competent science teacher.

Based on Lave and Wenger’s (1991) concept of situated learning, a teacher learns how to utilize and implement new science-teaching practices through experienced teachers. In this social dynamic, she is the newcomer; the old-timer is the expert. As she continues to attend more professional developments, she becomes more active in the community. She is no longer an outsider, but a member in the science-teaching community. This process where the newcomer moves from the periphery to the community’s center is known as legitimate peripheral participation. Through this progression, the newcomer becomes an old-timer.

Thus, learning occurs in social interactions within context, activity, and culture; this concept is known as “situated learning.” Within situated learning, knowledge is socially distributed. Lave and Wenger (1991) assert that learning is useless unless it applied within the context that is intended for. The success of the science teacher depends on her social interactions between other teachers within the community. Therefore, learning must take place within a
social setting. This setting is known as a CoP and offers teachers in situated learning activities a chance to collaborate with other members, which has been found to have a positive influence on teacher and student learning (Liu et al., 2010; Vescio et al., 2008).

**Legitimate peripheral participation.** According to Lave and Wenger (1991), the concept of legitimate peripheral participation provides a way to connect the relationships between newcomers and old-timers, the acquisition and dissemination of knowledge; and the transformation of identities. As a newcomer, learners participate in peripheral activities such as observing the experts, acquiring the culture’s language, using the culture’s tools, and organizing the cultures’ beliefs and values.

In a CoP, access to an expert is vital to a member’s learning experience (Lave & Wenger, 1991). Tschannen-Moran and McMaster (2009) found that professional development sessions that focus on mastery experience with follow-up meetings with expert coaches had a strong effect on teaching efficacy beliefs compared with teachers who did not participate in follow-up meeting with expert coaches. Teachers who interacted with the experts were more likely to report an increase in their teaching efficacy beliefs. In connecting Lave and Wenger’s concept of CoP, when a teacher masters a new instructional practice with the assistance of an expert, the instructional practice becomes reified. Through situated activities and legitimate participation, the teacher will be able to internalize the science knowledge and transmit the knowledge to new teacher members. The success of membership in a CoP relies on the learner’s motivation to engage in the community and the community’s willingness to offer access to knowledge.

CoP can be connected to Vygotsky’s (1978) social constructivism theoretical framework for learning, as his concept of Zone of Proximal Development (ZPD) provides a foundation for how people master skills through tool usage and social interactions. According to Vygotsky,
ZPD is a shared space between a learner’s actual development and what she can achieve (potential development) when provided with mediating tools (tools, signs, language, or more experienced human beings). Vygotsky (1978) explains that the ZPD is “the distance between the actual developmental level as determined by independent problem solving and the level of potential development” (p. 86). This learning is achieved with the help of adult guidance, a tool, or in collaboration with more knowledgeable members.

Mastery of knowledge is gained through the use of mediating tools and social interactions. Within this context, these social interactions are extended through professional development. Professional development techniques that focus on building a CoP meet two requirements for Vygotsky’s (1978) learning theoretical framework: they provide a repository for knowledge and skills and can be used to extend social interactions. Professional development that connects science teachers with experts can serve as a way for new learners to gain accessibility to the learning community (Fosnot & Perry, 2005; Tschannen-Moran & McMaster, 2009).

According to Vygotsky (1978), the process of mediated memory and learning start externally (tools, signs, or language), and with practice learning becomes internalized as mastery occurs. People use external tools (tools, signs, or language) in order to mediate learning. Once the mediated tool is no longer necessary, the learning becomes memory, a process called internalization. Ultimately, through continual interactions within a science-teaching and learning community, teachers will build content knowledge, increase their science self-efficacy (Desimone, 2011; Garet et al., 2001; Sinclair et al., 2010), and internalize good teaching practices that transpire within a CoP. Figure 1 illustrates this relationship.
To summarize the theoretical framework of Lave and Wenger’s (1991) model for learning, there are three key interlinking concepts: situated learning, CoP, and legitimate peripheral participation. According to Lave and Wenger, learning does not occur in a vacuum but is situated in a CoP. Through the acquisition of knowledge, learners move from the community’s periphery to the center in a process known as legitimate peripheral participation, which suggests that the growth of membership in a CoP is mediated by the accessibility that a newcomer has physically and socially.

**Experienced Community of Practice (eCoP)**

The success of a CoP relies on the experience of the members. Cadiz et al. (2009) propose that there are four dimensions in which a person experiences their CoP, and they created a survey to measure experienced community of practice (eCoP). The four dimensions of eCoP according to Cadiz et al. (2009) are:
• Open communication. Cadiz et al. (2009) suggest that without open communication, situated activities would not occur between CoP members, and as a result the community will dissolve. Open communication can be synchronous (face-to-face) or asynchronous (online, message boards, emails, and other virtual modes of interactions).

• Shared vocabulary. In a CoP, each member utilizes a common language or jargon to interact with other members in order to facilitate the transfer of information. With a shared vocabulary, the group establishes a sense of exclusivity, which Cadiz et al. (2009) say adds more value and motivation for an expert to attend and interact within a CoP. As long as the members grasp the shared vocabulary, the situated activities between members can continue. Wenger, McDermott, and Snyder (2002) assert that CoP becomes more effective if there is a shared vocabulary among members.

• Remembering previous lessons. Within a CoP, the main goal is to transfer best practices and lessons from member to member. For example, science teachers may discover that starting an inquiry lesson with a research question is vital for students to think critically and fulfills the science standards. The CoP becomes a great place to share the best science-teaching practices with other science teachers and archive them for CoP repository.

• Learning from each other. Through situated activities and legitimate participation, knowledge can be propagated between members within a CoP (Lave & Wenger, 1991). The purpose of a CoP is to exchange information between community members through group interactions. If the knowledge exchange is not valuable, the CoP becomes more of a social group or disappears (Lave & Wenger, 1991). A CoP
provides members a chance to learn from previous experiences and a place for new information to be applied to a common practice.

Cadiz et al. (2009) suggest that the more participants feel that their CoP has open communication, shares vocabulary, remembers previous lessons, and learns from each other, the better the eCoP for those participants. Figure 2 demonstrates the stages of development and the extent to which a member feels connected to their CoP. When participants are active, they are most engaged in their CoP. For the purpose of this study, it is important to measure the extent to which teachers feel connected to their science-teaching CoP.

![Figure 2. Stages of development for community of practice. From “Communities of Practice and Social Learning Systems” by E. Wenger, 2000, Organization, 7(2), pp. 225-246. Copyright 2000 by Sage Publishing. Reprinted with permission.](image)

**Education**

The need for a CoP in science-teaching has been demonstrated by data collected from the Eisenhower Professional Development Program (Garet et al., 2001). The study was based on a national sample of 1,027 math and science teachers. Based on the sample, the researchers found
empirical evidence that the best practices for professional development and teacher learning included:

- Learning opportunities that were sustained and intensive.
- Learning opportunities that focus on academic content.
- Learning opportunities that are more active and “hands-on.”
- Learning opportunities that are integrated in the daily school practices.

Results from other studies also support these best practice outcomes for effective professional development (Cohen & Hill, 1998; Supovitz & Turner, 2000). CoP can potentially serve as a foundation for providing professional development that follows the best practices indicated by the research findings.

Communities of practice connect science teachers who have the same goal of learning, knowledge sharing, and collaboration in science-teaching and science education reform. Teachers who participated in a CoP in science-teaching reported they have a better understanding of teaching science standards and were more comfortable teaching science-inquiry lessons (Fazio, 2009; Goodnough, 2010). While this research indicates the need for school partnerships with science experts, teacher collaboration learning, and learning continuity, these studies do not examine how being a part of a CoP affects teaching self-efficacy. There is limited research evaluating how being a part of a CoP affects teaching self-efficacy, although research has found that higher teaching efficacy leads to more effective science-teaching (Lumpe et al., 2012; Sinclair et al., 2010). Therefore, it is vital to examine how being part of a CoP can provide a ZPD through situated learning and how legitimate participation can affect science-teaching efficacy beliefs.
Virtual Teacher Self-Efficacy Beliefs

In recent years, virtual schools have become more prevalent in the United States (Mangieri, 2008) and are now considered a legitimate method to deliver key instruction and a part of the everyday landscape for education (Strother, 2002). Virtual schools are a form of distance education that delivers online courses or classes that cater to K–12 grade levels. As more school districts provide students with virtual learning opportunities, there is a growing demand for highly qualified teachers for that environment. While there are similar components to teaching within traditional school settings and virtual environments, little is known about the experience of virtual teachers in their CoP and their effects on science-teaching efficacy beliefs. Currently, there is only one study that examines the effects of professional development, peer coaching, and support on teaching efficacy beliefs for virtual teachers.

Mangieri (2008) examined the efficacy beliefs of 39 virtual high school teachers at a Mississippi virtual school and evaluated how various professional development activities affected perceived teaching efficacy. The study found that continual professional development had a positive effect on teaching efficacy. Furthermore, two-thirds of the participants reported that peer coaching had a positive influence on their teaching efficacy beliefs and online teaching practice.

Mangieri’s (2008) research on teaching efficacy demonstrates a need for more research on how virtual teachers can utilize their CoP to enhance their teaching efficacy beliefs. As mentioned in the previous section, teaching efficacy beliefs have been found to have a positive influence on teaching pedagogy and student achievement (Tschannen-Moran et al., 1998); therefore, understanding and enhancing teaching efficacy beliefs can potentially improve professional development, support, and training for virtual teachers.
Virtual Schools

This section provides a brief history on virtual schools and the need to study virtual teacher science efficacy beliefs. The National Center for Education Statistics (1999) defines distance education as classes offered in remote locations via audio, video, or computer technologies. These trainings and classes can be synchronous, asynchronous, or both. Web-based or Internet-based education is a form of distance education that utilizes the Internet for delivery of classes. Virtual schools are a form of distance education that delivers online courses or classes that cater to K–12 grade levels. Virtual schools can be run by public school districts, local education agencies, charter schools, colleges, regional agencies, and as nonprofit or for-profit (Simonson, Smaldino, Albright, & Zvacek, 2006). Virtual schools can operate as supplemental programs, full-time programs, blended online programs (courses that blend online and face-to-face instruction), or web-facilitated where between 1% and 20% of the content is delivered online (Watson & Ryan, 2007).

Since the launching of Utah’s Electronic High School in 1994, virtual schools have grown in the United States at a significant pace (Hawkins, Graham, & Barbour, 2012). Setzer and Lewis reported in 2005 that 72% of schools districts were planning to expand distance education in the near future. According to a “Keeping Pace 2012 Report” for the school year of 2012–2013, two new fully online schools opened in Iowa and New Mexico, which brings the number of states with online schools to 31 (Watson, Murin, Vashaw, Gemin, & Rapp, 2011). A major factor in the rise of virtual schools is due to education reforms that call for educational choice and individualized instruction, which online distance learning can easily provide (Mangieri, 2008). In addition, Mangieri reports that educational entrepreneurs are capitalizing on the call for educational choice and providing online alternatives to traditional K–12 public
schools. As more virtual schools are opening, there is also an increase in K–12 online student and teacher population (Archambault & Crippen, 2009).

With the rapid growth of K–12 online student and teacher population, the teacher’s role in an online environment will also expand (Archambault & Crippen, 2009; Hawkins et al., 2012). Davis and Roblyer (2005) add that the characteristics and behaviors of effective face-to-face teachers are similar to virtual teachers; however, online teachers have new roles, responsibilities, and instructional pedagogy that must be initiated to become an effective online teacher. As a result, guidelines and standards for instructional practices for online environments have been adapted from face-to-face settings that emphasize content knowledge, communication skills, and instructional design (American Distance Education Council, 2003; Higher Education Program & Policy Council, 2000; South Regional Education Board [SREB], 2008). DiPietro, Ferdig, Black, and Preston (2008) add that while these guidelines provide a foundation for understanding online instructional practices and course design in online environments, they do not address the teaching skills needed for virtual school environments. With new guidelines and standards for teaching online, professional development sessions have been created to train virtual teachers (SREB, 2008). According to a report by SREB (2008), most virtual schools provide professional training and development for newly hired virtual teachers regardless of their years of experience in traditional schools. However, Watson and Ryan (2007) report that while state-led virtual schools continue to expand, few states have set policies and requirements for online teacher professional development.

In 2009, the SREB created the first Standards for Quality Online teaching, which define the qualifications of an online teacher and standards necessary for “academic preparation, content knowledge, online skills and delivery" (SREB, 2009). The guidelines provide state
virtual schools with benchmarks for hiring, training, and evaluating online teachers (SREB, 2009). In their report, the board stressed the need for ongoing and continual professional development. Furthermore, SREB adds that teachers in traditional settings do not require technology as a primary means of communication in order to transfer content knowledge to their students, whereas with online teaching, technology skills are vital to transmit content knowledge to students. SREB recommends that ongoing professional development be offered to continue to strengthen virtual teachers’ technology skills.

The SREB report (2009) recommends that professional development for virtual teachers should include both formal and informal training, with activities that range from online courses, workshops, Webinars, online communities, and forums. SREB highlights the need for CoP online as these communities will provide opportunities for virtual teachers to share ideas, discuss, illustrate, and collaborate with each other. These types of professional development activities should be designed to be flexible because most virtual teachers have different schedules than do traditional teachers. Unfortunately, the growth of K–12 virtual schools is such a recent phenomenon that few studies are available that investigate best practices for teaching in online environments and professional development of virtual teachers (Cavanaugh, Gillian, Kromrey, Hess, & Blomeyer, 2004).

Since the virtual teaching position is relatively new compared to the traditional brick-and-mortar school environment, there is a dire need to provide professional support and training for virtual teachers. Davis and Roblyer (2005) reported that virtual teachers felt disconnected from their faculty members and their students. Hawkins, Graham, and Barbour (2012) examined teachers at a virtual high school in Utah, where teachers reported feeling isolated from other virtual teachers. According to the study, virtual teachers reported that even though the high
school teachers met monthly via synchronous professional development sessions, many teachers reported that they still felt isolated and alone because their colleagues were less accessible. According to Hawkins et al. (2012), “Teachers experience isolation as they struggled to learn from one another and to understand their performance compared in relation to others” (p. 137). Their study calls for a more collaborative online CoP where teachers can continue to share best practices and experience being part of a virtual online educator community.

In summary, with the expansion of virtual schools in the United States, there is a need to add to the growing body of literature on science-teaching efficacy beliefs as it pertains to virtual teachers. As more students are enrolling in virtual schools, more teachers are needed to deliver key educational standards (SREB, 2009). Since the growth of virtual schools is a recent phenomenon, more research needs to be conducted to gain a better understanding of how to train and retain teachers so they can provide high-quality instruction for students (SREB, 2009). As mentioned in the previous sections, teachers who participated in a professional CoP reported having higher teaching self-efficacy (Fazio 2009; Lakshmanan et al., 2011; Liu et al., 2010; Sinclair et al., 2010); therefore, it would be potentially beneficial to gain knowledge about the experience of virtual teachers in their CoP, and how their experience affects their science-teaching efficacy beliefs.

Summary

This review of literature supports the purpose of this study. The review highlighted the history of science education reform in the United States and revealed the need for teaching science inquiry instruction in order to build students’ science literacy. In addition, the review of literature provided a basis for understanding how to improve professional development by emphasizing research that details successful and unsuccessful professional development methods
and learning communities in order to build science-teaching efficacy. Detailed within this review was the theoretical framework for the study, which included social constructivism, community of practice, and self-efficacy. Furthermore, the review provided research relevant to teaching efficacy, particularly science-teaching efficacy, and the importance of a collaborative environment for teacher learning in the form of CoP. Finally, the last section provided the history of virtual online schools and the need for research on science-teaching efficacy of virtual teachers.

Further research employing quantitative methods is needed to add to the literature on science-teaching efficacy beliefs and the experience of CoP. While there has been some research that examined the relationship between the efficacy beliefs of teachers and their professional development, there has been little research that explores the relationship between science-teaching efficacy beliefs and CoP (Lumpe et al., 2012; Sinclair et al., 2010). Furthermore, only one study has found a positive relationship between virtual teachers’ teaching efficacy and continual professional development (Mangieri, 2008). It is reasonable to assume that teachers who participate in a CoP and possess science-teaching efficacy are related. Therefore, it is useful to examine if there is a significant correlation between the experience of community of practice and science-teaching efficacy beliefs.
Chapter Three: Methodology

This chapter will present the methodology used for this study. The first section will provide an overview of the research design. The next section will outline the data collection procedures, including sample selection and instrumentation. Next, the methods of analysis are presented for evaluating each of the research questions. The last section will be a summary of the chapter.

Research has indicated that teachers who were involved in science communities of practice reported experiencing higher teaching efficacy (Knapp, 2003; Sinclair et al., 2010). In addition, researchers have found that higher teaching efficacy leads to more effective science-teaching and better student achievement (Lumpe et al., 2012; Sinclair et al., 2010). The purpose of this study is to examine the extent of whether K–12 teachers teaching in a virtual school experience a community of practice in science education and how that experience affects personal science-teaching efficacy and science-teaching outcome expectancy as measured by Riggs and Enochs’ (1990) STEBI-A instrument. The study is rooted in theoretical frameworks from Lave and Wenger’s (1991) community of practice and Bandura’s (1977) self-efficacy beliefs.

Research Design

The researcher uses a descriptive, correlational, quantitative, nonexperimental survey design (Bryman, 2008; Creswell, 2009) for this study. “Quantitative research questions inquire about the relationships among variables that the investigator seeks to know. They are used frequently in social science research and especially in survey studies,” according to Creswell (2009, p. 132). Furthermore, the purpose of survey designs is to make descriptive assertions about a certain population (Babbie, 1998). In addition, correlational research used to assess two
variables of interest that may be related ultimately enables a researcher to draw conclusions that “allow the researcher to speak to some issue in the real world” (Hancock & Mueller, 2010, p. 55). For the present study, the relationship between teachers’ reported experiences in a community of practice and their science-teaching efficacy beliefs are examined through validated and reliable survey instruments.

While it is important to utilize theoretical concepts in research, Kumar (1999) states that concepts should be operationalized in measurable terms in order to reduce and eliminate variability in respondents’ understanding of the concepts. These measurable terms are called variables (Kumar, 1999). For the present study, the variables will be ordinal and will be measured quantitatively with a Likert scale. “The goal of Likert-scale is to measure intensity of feelings about the area in question” (Bryman, 2008, p. 146). For the purpose of this study, the areas are teachers’ reported experiences in a community of practice and their science-teaching efficacy beliefs. The independent variable is experienced community of practice measured by the Experienced Community of Practice Scale (eCoP) (Cadiz et al., 2009). The independent variables as measured by the eCoP scale are open communication, shared vocabulary, remembering previous lessons, and learning from each other. The dependent variables are science-teaching efficacy beliefs and science-teaching outcome expectancy measured by STEBI-A (Riggs & Enochs, 1990). Following are operationalized definitions:

- Experienced community of practice (eCoP): the measure of participants’ “subjective experience of membership in a community of practice” (Cadiz et al., 2009);
- Personal science-teaching efficacy beliefs: a science teacher’s confidence in her or his ability to successfully teach science;
• Science-teaching outcome expectancy: a science teacher’s expectations that effective science-teaching will influence his or her students.

**Measures**

As described in Chapter 1, this research study seeks to examine the extent of how virtual K–12 teachers’ experience in a community of practice in science education can affect their science-teaching efficacy. Experience of community of practice will be measured using Cadiz et al. (2009) eCoP instrument. The instrument has origins in Lave and Wenger’s (1991) concept of community of practice, which consists of people who share a common interest or profession coming together with the goal of exchanging knowledge through open communication (Lave & Wenger, 1991).

Science-teaching efficacy will be measured by using Riggs and Enochs’ (1990) STEBI-A instrument. The Science-Teaching Efficacy Beliefs Instrument-A (STEBI-A) is a survey designed by Riggs and Enochs (1990) to measure the level of science-teaching efficacy of in-service science teachers. The instrument measures science-teaching efficacy beliefs through two subscales: Personal Science-Teaching Efficacy (PSTE) and science-teaching outcome expectancy (STOE). It has its theoretical framework in Bandura’s self-efficacy social cognitive theory (Bandura, 1977) and Gibson and Dembo’s (1984) Teacher Efficacy Scale.

**Research Questions**

The purpose of this descriptive, correlational, quantitative, nonexperimental study is to determine if relationships exist between personal science-teaching efficacy, science-teaching outcome expectancy, and the identifying variables of experienced community of practice: (a) open communication, (b) shared vocabulary, (c) remembering from previous lessons, and (d) learning from each other. The following are research questions that will be explored in the study.
R1: What is the relationship between experience of community of practice and personal science-teaching efficacy (PSTE)? Which dimensions of experience in community of practice have the greatest effect on PSTE?

R2: What is the relationship between experience of community of practice and science-teaching outcome expectancy (STOE)? Which dimensions of experience in community of practice have the greatest effect on STOE?

Instrumentation

Three surveys were used for this research. The three surveys were combined into one on a web-hosting site on SurveyMonkey.com. SurveyMonkey is an online survey tool that researchers use to create surveys, then post them on the encrypted website or email them to participants (Creswell, 2009). In addition, SurveyMonkey can generate results and reports in the form of descriptive statistics and graphs. These results can be downloaded into a spreadsheet for further data analysis. The following section will describe the instrumentation that will be used in this research.

Demographic data sheet. The researcher uses Mangieri’s (2008) demographic survey that examined the teaching efficacy of virtual teachers. Her demographic survey will provide basic foundational information about virtual teachers. Permission to use and modify Mangieri’s demographic survey was gained through email communication (Appendix A); the demographic survey was modified to fit the purpose of this research. The modifications included omitting the first three questions from Mangieri’s demographic survey. For the purpose of this research, virtual teachers and virtual teaching settings are the primary concern. Mangieri’s first three questions pertain to teaching in face-to-face teaching environments. The data that will be collected in the present study will include community setting for online teaching position, years
of face-to-face teaching experience, years of online teaching experience, primary content area for online teaching position, types of professional development for online teaching, and gender. A copy of the demographic data survey can be found in Appendix B. This demographic survey will be added to SurveyMonkey.

**Experienced Community of Practice (eCoP).** Cadiz et al. (2009) developed two surveys that measured absorptive capacity (an individual’s ability to transform new knowledge into useable knowledge) and experienced community of practice (the degree to which a person is involved in a community of practice). While Cadiz and colleagues developed both an absorptive capacity (aCaP) scale and experienced community of practice (eCoP) scale in their research, only the eCoP scale will be measured in this study. As stated in Chapter 1, the purpose of this study is to determine if there is a relationship between the experiences of virtual teachers in their communities of practice and science-teaching efficacy beliefs; therefore, it is not necessary to use the aCaP scale. While individual knowledge is vital to developing science efficacy, numerous studies have found that teachers who are isolated from their professional community of practice are less likely to report high teaching efficacy and are less likely to teach science (Czerniak et al., 1999; Knapp, 2003; Sinclair et al., 2010). Therefore, eCoP was chosen to be the best instrument to measure an individual’s engagement in a community of practice.

The experienced community of practice scale (eCop) was developed to measure the “extent to which a person is engaged in his/her community of practice” (Cadiz et al., 2009). Cadiz et al. (2009) developed field-appropriate measures of experience in a community of practice. It has origins in Lave and Wenger’s (1991) concept of community of practice (CoP), which consists of people who share a common interest or profession with the goals of exchanging knowledge through open communication (Lave & Wenger, 1991).
The eCoP survey consists of a 7-point Likert-type scale for each of the items, anchored from 1 = *strongly disagree* to 7 = *strongly agree*. Each researcher independently created a pool of three to five items aligned with the strong theoretical framework. The four dimensions of eCoP are open communication, shared vocabulary, remembering previous lessons, and learning from each other. Cadiz et al. (2009) assert that people will experience the greatest sense of their community of practice if open communication provides opportunities to use the shared vocabulary and people are able to learn from each other and their previous lessons. The eCoP scale can be found in Appendix C.

**Science-Teaching Efficacy Belief Instrument-A (STEBI-A).** The STEBI-A is a survey designed by Riggs and Enochs (1990) to measure the level of science-teaching efficacy of inservice science teachers. The instrument measures science-teaching efficacy beliefs through two subscales: personal science-teaching efficacy (PSTE) and science-teaching outcome expectancy (STOE). It has its theoretical framework from Bandura’s self-efficacy social cognitive theory (Bandura, 1977) and Gibson and Dembo’s (1984) Teacher Efficacy Scale.

The survey is composed of 25 Likert-scale items, each of which has five response ratings, ranging from 5 to 1 accordingly: *strongly agree, agree, uncertain, disagree, and strongly disagree*. Thirteen of the items: 2, 3, 5, 6, 8, 12, 17, 18, 19, 21, 22, 23, and 24 measure PSTE, while the remaining 12 items: 1, 4, 7, 9, 10, 11, 13, 14, 15, 16, 20, and 25 measure STOE. The following questions were reverse scored to ensure consistent values between positively and negatively worded questions: 3, 6, 8, 10, 13, 17, 19, 20, 21, 22, 24, and 25. The STEBI-A can be found in Appendix D.
Reliability and Validity

To ensure the quality of the instruments, reliability and validity were considered. Bryman (2008) writes:

Both reliability and measurement validity are essentially concerned with the adequacy of measures, which are most obviously a concern in quantitative research. Internal validity is concerned with the soundness of findings that specify a causal connection, an issue that is most commonly concern to quantitative researchers. (p. 33)

The following provides reliability and validity results from the eCoP Scale and STEBI-A Instrument.

**eCoP scale reliability and validity.** Internal consistency and construct reliability were evaluated by interpreting the squared standardized factoring loading for eCoP constructs. Using a two-way random effect in SPSS and construct reliability resulted in a coefficient score of .769 for communication, .806 for vocabulary, .804 for remembering past lessons, and .852 for learning from each other. Each estimated construct reliability was measured against a .80 guideline. Although communication construct was below .80 construct reliability, the researchers argue that the shared variance between the constructs and their measures outweigh the shared variances between error variance (Cadiz et al., 2009).

Validity ensures the “integrity of the conclusions generated from a piece of research” (Bryman, 2008, p. 33). Results from path analysis to test criterion-related validity demonstrated that the measures are internally consistent, are related to the variables, and provide explanatory power (Cadiz et al., 2009).

**STEBI-A reliability and validity.** Criterion and content validity of the STEBI-A were pilot tested, and expert judges “contributed to the instrument’s content validity” (Riggs &
Enochs, 1990). The panel clarified dimensions for each item and anchored scale. Reliability was tested through a pilot and major study. Riggs and Enochs tested internal reliability by conducting Cronbach’s alpha in their pilot study. Cronbach’s alpha is typically used to test internal reliability, and the figure .80 is used to indicate an “acceptable level of internal reliability” (Bryman, 2008, p. 151). The PSTE subscale Cronbach’s alpha was .92, and the STOE subscale was .74 (Riggs & Enochs, 1990).

The major study included a sample of 331 in-service elementary teachers. The final data analysis resulted in Cronbach’s alpha of .92 PSTE subscale, and Cronbach’s alpha of .77 for STOE subscale. Riggs and Enochs (1990) suggest that possible explanations for the lower STOE subscale alpha score was that science-teaching outcome expectancy has been historically a difficult construct to define and measure, and teachers may lack science content knowledge. “Construct validity is based on the way a measure relates to other variables within a system of theoretical relationships” (Babbie, 1998, p. 134). To establish construct validity, Riggs and Enochs ran a Pearson $r$ correlation test. They found that all criteria were significantly correlated in a positive direction. The researchers concluded that the STEBI is a “valid and reliable tool” (Riggs & Enochs, 1990, p. 633) to examine science-teaching efficacy beliefs and teacher learning.

**Participants**

Participants will be drawn from a sample of convenience within an education management organization, which serves 85 counties within the 50 states. The population in this study will be teachers who taught science during the 2013–2014 academic school year for virtual schools managed by the education management organization. The participants are part of a subset of online teachers who teach science online in K–12 virtual schools. The secured list from
the education management organization will be accessible after Pepperdine Institutional Review Board (IRB). Approval for research has been given by the education management organization (Appendix E).

**Procedure**

Initial correspondence between the education management organization and the researcher regarding this project took place on February 21, 2014, when a proposal was sent to the director of academic services. The director granted approval for the research on March 10, 2014. Upon IRB approval, data collection occurred. An IRB exempt application was submitted to Pepperdine Institutional Review Board, where it was determined to meet exempt status as outlined in 45 CFR-46.1010 (b) (2) and CFR 46.117(c) since the research involves a survey with an adult population that is not protected (see Appendix F).

The teacher consent email (Appendix G) was sent to the director of academic services who sent the email to potential participants. The copy of the email includes the description of the study, indicates this study is strictly voluntary, and informs participants they can discontinue their participation at any point in the study. In addition, the email provides a list of participants’ rights and explains potential risks and benefits of the study. The only identifiable risk was the time participants must spend to complete the survey. Participants were informed that the survey would take approximately 30 minutes to complete. Furthermore, the survey indicated that participants should complete it after working hours as to not interfere with district time. Potential participants were also informed that the survey is completely anonymous. To protect the identity of participants, no information that could be linked to the participants’ identity was collected. The web link to the survey was embedded in the email; by clicking on the link, the participants tacitly gave approval to consent to participate in the present research.
The Demographic Survey, eCoP Scale, and STEBI-A instrument were combined as one survey on SurveyMonkey. The survey was self-administered through SurveyMonkey, which is a secure web-hosting survey site. Users accessed the secured link, and Secure Socket Layers (SSL) technology protected users’ responses, which were encrypted to ensure that all user data will be safe, secure, and available only to the researcher. Participants accessed the embedded web link to SurveyMonkey and indicated their answers by clicking on the appropriate radio buttons. A reminder email to complete the survey was sent to participants two weeks after the initial email. A subsequent reminder email was sent to participants one month after the initial email. The survey remained open for two months. The data was securely stored on SurveyMonkey, and the only person who has the password is the researcher. The researcher will also keep the data in a password-protected file on an external hard drive for in a locked file cabinet to which only the researcher has access. The data will be destroyed after five years.

Data Analysis

The SPSS statistical program was used for analyzing data. After the survey web link closed, the researcher entered the data and ran descriptive statistics for each variable, and determined the mean, standard deviation, and mode. Each statistical test will be one-tailed. In order to avoid a Type I error, the researcher will set an alpha at .05. Listed below are the hypotheses and the statistical test conducted.

Hypotheses 1 and 2

R1: What is the relationship between experience of community of practice and personal science-teaching efficacy (PSTE)? Which dimensions of experience in community of practice have the greatest effect on PSTE?
H1: There is a significant relationship between experience of community of practice and PSTE. The dimension of “learning from each other” measured by eCoP instrument will have the greatest effect on PSTE.

R2: What is the relationship between experience of community of practice and science-teaching outcome expectancy (STOE)? Which dimensions of experience in community of practice have the greatest effect on STOE?

H2: There is a significant relationship between experience of community of practice and STOE. The dimension of “learning from each other” measured by experienced community of practice (eCoP) instrument will have the greatest effect on STOE.

“Pearson $r$ is a method for examining relationships between interval/ratio variables” (Bryman, 2008, p. 327). Since Hypotheses 1 and 2 examine the relationship between the independent variable and dependent variable, a Pearson’s $r$ analysis was run to determine if a relationship exists between the variables for the first part of the hypotheses.

Because Hypotheses 1 and 2 have one dependent variable and multiple independent variables that may affect the dependent variables, a regression model was performed for the second part of the hypotheses. Babbie (1998) writes, “Survey researchers very often find that a given dependent variable is affected simultaneously by several independent variables. Multiple regression analysis provides a means for analysis such situations” (p. 308). In addition, a bivariate analysis was used to identify relationships between gender, geographic area, and teaching experience and PSTE and STOE.

The researcher hypothesizes that the dimension of “learning from each other” will have the greatest effect on PSTE and STOE. According to researchers (Akerson et al., 2009; Lave & Wenger, 1991; Wenger et al., 2002), learning from one another is a key factor in the success of a
community of practice. It is therefore worth examining if the dimension of “learning from each other” within the eCoP scale has the greatest effect on science-teaching efficacy beliefs.

For each hypothesis, the researcher performed tests to ensure that there were no violations of normality, linearity, and homoscedasticity.

**Ethical Issues**

In designing a research study that involves human participants, researchers must take ethical issues into account. The present research has been designed to ensure the rights, safety, and welfare of potential participants. The Institutional Review Board at Pepperdine University reviewed the research proposal to ensure that all necessary precautions were taken (Appendix F). Once Pepperdine approves it, the study will be reviewed the education management organization. Once approved by both boards, informed consent will be sent to participants. Participants were told that their participation was completely voluntary; in addition, participants were allowed to discontinue their participation at any point in the study. Anonymity of potential participants was addressed; as noted earlier, no identifying data will be linked to the identity of participants, and the survey was anonymous. Lastly, the only harm that is present in this study is participation time. Participants will be informed that the survey should be taken during nonworking hours.

**Limitations**

As with most research, there are some limitations to the present study. First, the participant population was gained through a sample of convenience. Therefore, the results cannot be generalized to the entire population of science teachers. Although, Bryman says a “convenience sample probably plays a more prominent role than is sometimes supposed” (2008, p. 183), Bryman also cautions that the data will not provide definitive findings. However, the
data can provide a “springboard for further research or allow links to be forged with existing findings in an area” (Bryman, p. 183). Second, the present research only examined correlations between variables; therefore, data does not identify causation. Third, self-reporting can be problematic as responses may reflect social desirability bias, which is “the distortion of data that is caused by a respondent’s attempts to construct an account that conforms to a socially acceptable belief or behavior” (Bryman, 2008, p. 699). However, surveys are efficient and cost-effective in data collection for a large population (Babbie, 1998); furthermore, the instruments have demonstrated reliability and validity.

Summary

This chapter details the methodology employed to conduct the present study. The researcher has provided a detailed description of this study, including: (a) the theoretical basis for conducting research, (b) the research design, (c) the instrumentation, (d) the reliability and validity of the instrumentation, (e) the research questions and hypotheses, (f) the participants, (g) the procedure, (h) the data analysis, (i) the ethical issues, and (j) the limitations of the study. It is the researcher’s hope that the data collected will provide a better understanding of how science-teaching efficacy beliefs can be affected within a community of practice in a virtual teaching community. The data may provide information that can help facilitate the development of professional communities of practice to assist virtual teachers in order to improve their science-teaching efficacy beliefs.
Chapter Four: Results

Results of the study are presented in this chapter. The first section provides participants’ demographics, and the next section records the findings related to the research questions, hypotheses, and analyses. The last section will be a summary of the chapter.

The purpose of this study is to examine to what extent teachers for a K–12 virtual school experience a community of practice in science education and how that experience affects personal science-teaching efficacy and science-teaching outcome expectancy as measured by Riggs and Enochs’ (1990) STEBI-A instrument. The study is rooted in theoretical frameworks from Lave and Wenger’s (1991) community of practice and Bandura’s (1977) self-efficacy beliefs. Three reliable and validated instruments were used to collect data: Mangieri’s (2008) Demographic Survey; Cadiz et al.’s (2009) Experience Community of Practice Instrument; and Riggs and Enochs’ (1990) Science-teaching efficacy Beliefs Instrument-A (STEBI-A). The researcher used a descriptive, correlational, quantitative, nonexperimental survey design (Bryman, 2008; Creswell, 2009) for this study. SPSS was used to analyze data.

Demographics

Participants were drawn from a convenience sample of teachers for online classes within an education management organization that serves 85 U.S. counties. The participants are part of a subset of teachers who taught science online in K–12 virtual schools during the 2013–2014 academic school year. An email with a web link to the survey was sent potential participants; the email was also embedded in the education management’s newsletter and community page. A reminder email was sent two weeks after the initial message. A subsequent reminder email was sent to participants one month after the initial email. The survey was hosted on SurveyMonkey and remained opened for two months. Of the 118 invited to participate via email, 58 completed
the first eight questions, but only 44 participants completed the entire instrument. Incomplete survey responses were omitted from the data analysis to avoid skewing the results.

A modified version of Mangieri’s (2008) demographic survey was used to collect information on participants’ teaching community setting, face-to-face teaching experience, online teaching experience, and professional development activities. The results for participants’ demographics are shown in Table 1. The majority of participants teach in suburban community settings (74%). Twenty-four participants (43%) have five to ten years of teaching in face-to-face settings; nineteen participants have more than 10 years of face-to-face teaching experience (34%); and two participants have less than one year of face-to-face teaching experience. The majority of participants have one to four years of experience teaching online (54%). Thirty-five participants (64%) indicated that they taught science as their primary content area, while five (9%) taught English, and seven taught math as their primary content area. The majority of participants (65%) taught high school. Participants were also asked to provide their gender, although this was an optional question. Most respondents (80%) were female.
Table 1

Demographics of Participants

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<td>Math</td>
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<td>13</td>
</tr>
<tr>
<td>Science</td>
<td>35</td>
<td>64</td>
</tr>
<tr>
<td>Grade/level in which teaching science</td>
<td>52</td>
<td></td>
</tr>
<tr>
<td>None</td>
<td>5</td>
<td>10</td>
</tr>
<tr>
<td>Elementary school</td>
<td>5</td>
<td>10</td>
</tr>
<tr>
<td>Elementary and middle school</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>Middle school</td>
<td>5</td>
<td>10</td>
</tr>
<tr>
<td>High school</td>
<td>34</td>
<td>65</td>
</tr>
</tbody>
</table>

Note. Mean percentage rounded to nearest percentile

The demographic survey also asked questions about the different types of teacher professional development activities. Results are shown in Table 2. The professional development consisted of initial training in online pedagogy, initial training in technology training, supported
mentorship, mandatory professional development workshops, optional professional development workshops, and informal professional development activities (Mangieri, 2008). Forty-seven respondents (85%) indicated that they received initial online technology training professional development, which prepared them technologically to teach online. However, only 39 teachers (71%) reported attending initial pedagogy training to prepare them to teach an online course.

Ongoing professional development results are as follows: 46 (84%) reported attending mandatory professional development; 39 teachers (71%) participated in optional professional development; 31 teachers (56%) reported participating in supported mentorship; and 31 teachers participated in informal professional development. Although the research questions did not specifically examine professional development activities, it would be beneficial in future studies to understand the different types of community of practice activities and training.

Table 2

<table>
<thead>
<tr>
<th>Professional Development (PD) Activities</th>
<th>N</th>
<th>% / Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supported mentorship</td>
<td>31</td>
<td>56</td>
</tr>
<tr>
<td>Informal professional development (PD)</td>
<td>31</td>
<td>56</td>
</tr>
<tr>
<td>Initial training: online pedagogy</td>
<td>39</td>
<td>71</td>
</tr>
<tr>
<td>Optional formal PD workshops</td>
<td>39</td>
<td>71</td>
</tr>
<tr>
<td>Mandatory, formal, online PD workshops</td>
<td>46</td>
<td>84</td>
</tr>
<tr>
<td>Initial technology training</td>
<td>47</td>
<td>85</td>
</tr>
</tbody>
</table>

*Note.* Mean percentage rounded to nearest percentile.

Results

The purpose of this descriptive, correlational, quantitative, nonexperimental study is to determine if relationships exist between personal science-teaching efficacy, science-teaching outcome expectancy, and the variables of experienced community of practice, which have been identified as: (a) open communication, (b) shared vocabulary, (c) remembering from previous lessons, and (d) learning from each other. As outlined in Chapter 3, STEBI-A (Riggs & Enochs,
1990) was used to measure personal science efficacy beliefs and science-teaching outcome expectancy, and the eCoP Instrument (Cadiz et al., 2009) was used to measure an individual’s engagement in a community of practice.

**Research Question 1 and Hypothesis 1.** The first part of Research Question 1 asked if there was any relationship between the experience of community of practice and personal science-teaching efficacy (PSTE). The PSTE mean scores were relatively high ($M = 56.77$ with a standard deviation [$SD$] of 7.66) and ranged from 30 to 65 with a maximum possible score of 65 (see Table 3). The eCoP means scores were also relatively high ($M = 71.47$) and ranged from 44 to 84, with the maximum possible score of 84. A Pearson correlation test was performed to determine if there was a relationship between community of practice experiences and PSTE. It was hypothesized that there would be a significant relationship between experience of community of practice and PSTE. The Pearson correlation test findings generated ($r = .364$; $p = .0245$). The $p$ value of the test was lower than 0.05; the null hypothesis is rejected at an alpha of 0.05. Therefore, the results show there is a significant linear statistical relationship between the teachers’ experiences in community of practice and PSTE. (See Table 3.)

The second part of Research Question 1 asked which dimensions of community of practice had the greatest effect on PSTE. It was hypothesized that the dimension of “learning from each other” measured by eCoP would have the greatest effect on PSTE. After running the Pearson correlation test, the findings were as follows: ($r = .100$; $p = .550$). The $p$ value was greater than 0.05, therefore the null hypothesis is accepted. Therefore, the results show the dimension, “learning from each other” did not have a significant statistical relationship with the teachers’ PSTE. (See Table 3.)
Table 3

*Personal Science-Teaching Efficacy (PSTE)*

<table>
<thead>
<tr>
<th>Respondent characteristics</th>
<th>N</th>
<th>% / mean (SD)</th>
<th>Study hypothesis</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Personal Science-teaching efficacy (PSTE)</em></td>
<td>44</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overall score</td>
<td>39</td>
<td>56.77 (7.66)</td>
<td></td>
</tr>
<tr>
<td>I am continually finding better ways . . . (item 2)</td>
<td>44</td>
<td>4.18 (0.81)</td>
<td>Hypothesis 1</td>
</tr>
<tr>
<td>Even when I try very hard . . . (item 3)</td>
<td>44</td>
<td>1.61 (0.87)</td>
<td></td>
</tr>
<tr>
<td>I know the steps necessary . . . (item 5)</td>
<td>44</td>
<td>4.02 (0.98)</td>
<td></td>
</tr>
<tr>
<td>I am not very effective monitoring . . . (item 6)</td>
<td>44</td>
<td>2.25 (1.10)</td>
<td></td>
</tr>
<tr>
<td>I generally teach science ineffectively (item 8)</td>
<td>43</td>
<td>1.63 (0.82)</td>
<td></td>
</tr>
<tr>
<td>I understand science concepts . . . (item 12)</td>
<td>42</td>
<td>4.5 (0.74)</td>
<td></td>
</tr>
<tr>
<td>I find it difficult to explain to . . . (item 17)</td>
<td>44</td>
<td>1.48 (0.59)</td>
<td></td>
</tr>
<tr>
<td>I am typically able to answer . . . (item 18)</td>
<td>44</td>
<td>4.45 (0.85)</td>
<td></td>
</tr>
<tr>
<td>I wonder if I have the necessary . . . (item 19)</td>
<td>42</td>
<td>1.69 (1.11)</td>
<td></td>
</tr>
<tr>
<td>Given a choice, I would not invite . . . (item 21)</td>
<td>42</td>
<td>1.83 (1.12)</td>
<td></td>
</tr>
<tr>
<td>When a student has difficulty . . . (item 22)</td>
<td>43</td>
<td>1.56 (0.83)</td>
<td></td>
</tr>
<tr>
<td>When teaching science, I usually . . . (item 23)</td>
<td>42</td>
<td>4.74 (0.63)</td>
<td></td>
</tr>
<tr>
<td>I don’t know what to do . . . (item 24)</td>
<td>43</td>
<td>1.84 (0.81)</td>
<td></td>
</tr>
</tbody>
</table>

A regression model was employed to adjust for the effect of potential confounders: gender, community setting, face-to-face teaching experience, and online teaching experience. We tested for normality, linearity, and homoscedasticity. The initial regression analysis showed a violation of the normality assumption (Shapiro-Wilk $W = 0.836; p = 0.000$). Some outliers were also detected. To test for homoscedasticity a Breusch-Pagan / Cook-Weisberg test was used. No heteroscedasticity was detected ($F = 2.06; 0.160$), and VIF values did not indicate presence of collinearity. Due to the violation of normality, a robust regression model for PSTE and eCoP was estimated. Results showed a positive linear relationship between PSTE and eCoP after adjusting for potential confounders ($B = .333; p = 0.005$). Female also showed a positive significant relationship with PSTE ($B = 5.142; p = 0.028$).
**Research Question 2 and Hypothesis 2.** The first part of Research Question 2 asked if there is a relationship between the experience of community of practice and science outcome teaching expectancy (STOE). The STOE mean score reported was 38.13 with a standard deviation of 6.82 with a possible overall score of 60 (see Table 4). As mentioned earlier, the eCoP scale maximum possible score is 84; the mean score for the responses was relatively high ($M = 71.47; SD = 8.81$). It was hypothesized that there would be a significant relationship between community of practice experiences and STOE. A Pearson correlation test resulted in findings showing ($r = .438; p = .0008$). With an alpha level of .05, we reject the null hypothesis, and report that the results show there is a significant statistical linear relationship between the teachers’ experiences in community of practice and science-teaching outcome expectancy. (See Table 4.)

The second part of Research Question 2 asked which dimensions of community of practice had the greatest effect on STOE. It was hypothesized that the dimension of “learning from each other” measured by eCoP would have the greatest effect on STOE. After running a Pearson correlation test, the findings were: ($r = .351; p = .031$). With an alpha of .05, the null hypothesis is rejected. Therefore, the results show the dimension “learning from each other” did have a significant statistical relationship between the teachers’ experiences and their science-teaching outcomes (see Table 5).
Table 4

Science Teaching Outcome Expectancy (STOE)

<table>
<thead>
<tr>
<th>Respondent characteristics</th>
<th>N</th>
<th>% / mean (SD)</th>
<th>Study hypothesis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Science-teaching outcome expectancy (STOE)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overall score</td>
<td>39</td>
<td>38.13 (6.82)</td>
<td></td>
</tr>
<tr>
<td>When a student does better . . . (item 1)</td>
<td>43</td>
<td>3.35 (0.97)</td>
<td>Hypothesis 2</td>
</tr>
<tr>
<td>When the science grades of students . . . (item 4)</td>
<td>44</td>
<td>3.36 (0.89)</td>
<td></td>
</tr>
<tr>
<td>If students are underachieving in . . . (item 7)</td>
<td>44</td>
<td>2.54 (0.98)</td>
<td></td>
</tr>
<tr>
<td>The inadequacy of a student’s . . . (item 9)</td>
<td>44</td>
<td>3.41 (0.95)</td>
<td></td>
</tr>
<tr>
<td>The low science achievement child . . . (item 10)</td>
<td>44</td>
<td>3.59 (0.92)</td>
<td></td>
</tr>
<tr>
<td>When a low achieving child . . . (item 11)</td>
<td>43</td>
<td>3.51 (0.83)</td>
<td></td>
</tr>
<tr>
<td>Increased effort in science teaching . . . (item 13)</td>
<td>43</td>
<td>2.81 (1.05)</td>
<td></td>
</tr>
<tr>
<td>The teacher is generally responsible . . . (item 14)</td>
<td>43</td>
<td>3.09 (0.81)</td>
<td></td>
</tr>
<tr>
<td>Students’ achievement in science . . . (item 15)</td>
<td>44</td>
<td>3.23 (0.91)</td>
<td></td>
</tr>
<tr>
<td>If parents comment that their child . . . (item 16)</td>
<td>42</td>
<td>3.67 (0.65)</td>
<td></td>
</tr>
<tr>
<td>Effectiveness in science teaching . . . (item 20)</td>
<td>43</td>
<td>2.67 (1.04)</td>
<td></td>
</tr>
<tr>
<td>Even teachers with good science . . . (item 25)</td>
<td>43</td>
<td>2.93 (1.12)</td>
<td></td>
</tr>
</tbody>
</table>

Table 5

Person Correlation between PSTE/STOE and eCop Dimensions

<table>
<thead>
<tr>
<th>eCop</th>
<th>PSTE</th>
<th>STOE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>r</td>
<td>p*</td>
</tr>
<tr>
<td>Overall</td>
<td>.364</td>
<td>.024</td>
</tr>
<tr>
<td>Open communication</td>
<td>.283</td>
<td>.080</td>
</tr>
<tr>
<td>Shared vocabulary</td>
<td>.425</td>
<td>.007</td>
</tr>
<tr>
<td>Previous lessons</td>
<td>.248</td>
<td>.128</td>
</tr>
<tr>
<td>Learning from each other</td>
<td>.100</td>
<td>.550</td>
</tr>
</tbody>
</table>

Note: p value corresponding to the test with null hypothesis (r = 0)

A regression model was employed to adjust for the effect of potential confounders: gender, community setting, face-to-face teaching experience, and online teaching experience. We tested for normality, linearity, and homoscedasticity. The Shapiro-Wilk test for normality was accepted. (W = .980; p = .772). To test for homoscedasticity a Breusch-Pagan / Cook-Weisberg test was used, and no heteroscedasticity detected (F = 1.92; p = 0.1654). The regression model
showed a significant effect between STOE and eCoP ($B = .482; \theta = 0.007$). The other regressors were not significant.

**Demographic Analysis**

Bivariate analysis was used to identify relationships between gender, geographic area, and teaching experience and PSTE and STOE. Since there was a small sample, Mann-Whitney Wilcoxon was used. The Mann-Whitney Wilcoxon rank-sum test is a nonparametric test equivalent to the student $t$-test. According to the $t$-test, there were no statistically significant differences between male and female, at $z = 1.831; p = 0.0671$ for the variable PSTE. There were no gender differences in STOE scores, $z = -0.113; p = 0.9098$. A student $t$-test was used to compare rural and nonrural teaching communities, and no significant differences were found for PSTE ($t = -0.8476$). There was a low statistically significant difference between rural and nonrural teaching communities for STOE ($t = 0.0541$). The $t$-test shows significant differences in the mean of eCop scores between teachers with fewer than five years of online teaching experience and teachers with five or more years of online teaching experience ($t = 2.4902; p = .00173$). Furthermore, teachers with fewer than five years experience in online teaching scored higher in the “remembering previous lessons” dimension ($t = .0033$). The Mann-Whitney Wilcoxon score was consistent with the findings ($z = .0073$). Teachers with fewer than five years of online experience scored higher in “learning from each other” dimension ($t = .0081$). The Mann-Whitney Wilcoxon score was consistent with the findings ($z = 0.0322$).

**Summary**

This chapter presented the results from the study that examined the relationship between the experiences for teachers in online classrooms in a community of practice and their science-teaching efficacy beliefs. The hypothesis tested found that there was a significant relationship
between experiences within a community of practice and personal science efficacy beliefs. Furthermore, there was a significant relationship between experiences within a community of practice and science-teaching outcome expectancy. In addition, the dimension of “learning from each other” in a community of practice had a significant relationship between science-teaching outcome expectancy. The implication for these findings and recommendations for future research will be discussed in Chapter 5.
Chapter Five: Summary

Initiatives to improve student learning in science have been the focus of education reform (Bybee, 2014; NSB, 2012). These policy goals aim to increase student achievement and raise the international ranking of U.S. students in science from the middle to the top in the next decade (NSB, 2012). These reforms emphasize teacher’s professional development as one the main factors in influencing students’ achievement.

To improve teacher quality, professional development activities have focused on teachers’ communities of practice (Feiman-Nemser, 2001; NSB, 2012). Researchers have found communities of practice that focus on teacher collaboration and continuity have a positive effect on teaching efficacy and student achievement (Akerson et al., 2009; Liu et al., 2010; Vescio et al., 2008). Chase et al. (2001) found that teacher efficacy increased when they are involved in an active community of practice, which consists of new teachers, experienced teachers, administrators, mentors, and faculty teacher educators who met to reflect on their practices on a regular basis.

In recent years, virtual schools have become more prevalent in the United States (Mangieri, 2008) and are now considered a legitimate method to deliver key instruction and a part of the everyday landscape for education (Strother, 2002). With the rapid growth of virtual schools, it is important to examine science-teaching efficacy beliefs as they pertain to teachers. Because teachers in these virtual schools are held to the same teaching standards as teachers in traditional schools, it was beneficial to examine their community of practice experiences and how these experiences affect their science-teaching efficacy and student outcomes. This study explored the relationship of community of practice for science teachers in virtual K–12 schools.
with their teaching efficacy and student outcome expectations. The following section summarizes the results.

**Summary of Findings**

The purpose of this study was to examine whether K–12 teachers teaching in a virtual school experience a community of practice in science education and how that experience affects personal science-teaching efficacy (PSTE) and science-teaching outcome expectancy (STOE). The study is rooted in theoretical frameworks from Lave and Wenger’s (1991) community of practice and Bandura’s (1977) self-efficacy beliefs.

The present study used the SPSS statistical program for analyzing data. Listed below are the research questions and hypotheses for each.

R1: What is the relationship between experiences of community of practice and personal science-teaching efficacy (PSTE)? Which dimensions of experience in community of practice have the greatest effect on PSTE?

H1: There will be a significant relationship between experiences of community of practice and PSTE. The dimension of “learning from each other” measured by the Experienced Community of Practice Scale (eCoP) instrument will have the greatest effect on PSTE.

R2: What is the relationship between experiences of community of practice and science-teaching outcome expectancy (STOE)? Which dimensions of community of practice experiences have the greatest effect on STOE?

H2: There will be a significant relationship between community of practice experiences and STOE. The dimension of “learning from each other,” measured by Experienced Community Of Practice (eCoP) instrument (Cadiz et al., 2009), will have the greatest effect on STOE.
The independent variable is community of practice experiences, which will be measured by the eCoP (Cadiz et al., 2009). The independent variables as measured by the eCoP scale are open communication, shared vocabulary, remembering previous lessons, and learning from each other. The dependent variables are PSTE and STOE, measured by the Science-Teaching Efficacy Beliefs Instrument-A (STEBI-A) (Riggs & Enochs, 1990).

Experienced Community of Practice and Personal Science Efficacy Beliefs. The research findings found a positive correlation between a teacher’s experiences in a community of practice and PSTE, which supports Hypothesis 1. As presented in Chapter 4, surveyed teachers with higher scores on the eCoP reported to having a higher sense of PSTE ($M = 56.77; SD = 7.66$). In addition, the reported eCoP scores were relatively high ($M = 71.47; SD = 8.81$). The results show that there is a significant statistical relationship between the teachers’ experiences in community of practice and their personal science-teaching efficacy. However, the second half of Hypothesis 1 was not supported as there was no significant correlation between PTSE and the dimension “learning from each other” in the eCoP scale. However, the dimension “shared vocabulary” ($p = .007 < .05$) was positively correlated with personal science efficacy beliefs.

Personal science-teaching efficacy belief is the level of confidence a science teacher has in his/her ability to successfully teach science. The PSTE scores recorded in this study were fairly high, which may be because science was the primary subject taught by the majority of respondents ($M = 64\%$). Furthermore, a high percentage of teachers who took part in the study (43\%) have 5 to 10 years of experience teaching in face-to-face settings, and 19 participants have more than 10 years of face-to-face teaching experience (34\%). It can be asserted that the PSTE scores of the teachers who took part in this study were high because of their content knowledge and teaching experience. High PSTE scores were consistent with other research (Lakshmanan et
The teachers’ overall high PSTE scores in this study may explain why there was no strong correlation between those scores and the dimension “learning from each other.” The teachers who participated in this study may already have high levels of content knowledge and confidence in their ability to teach science and so may feel less inclined to need to “learn from each other” in a community of practice.

The eCoP scores for the teachers who participated in the study were also relatively high, so it can be asserted that they do experience a strong connection to a community of practice. According to Lave and Wenger (1991), a community of practice functions by sharing tools, routines, symbols, and vocabulary to accumulate knowledge. The strong relationship between “shared vocabulary” and PSTE (p = .007 < .05) is aligned with Lave and Wenger’s community of practice theoretical framework. A community of practice creates a “common lingo” (Cadiz et al., 2009) to interact with each other and facilitate transfer of knowledge. Cadiz et al. add that a “shared vocabulary may be a way for a group to establish sense of exclusivity” (p. 1041). They further suggest that having this exclusivity adds value and motivation for interaction within a community of practice. While teachers in virtual schools have common science vocabulary with teachers in traditional brick-and-mortar schools, they also rely heavily on technology, which has created a new vocabulary concerning the transfer of knowledge and communication. Teachers in virtual schools rely on technology as a primary means of communication with their students, so that in online teaching, technology skills are vital in order to transmit content knowledge to students (SREB, 2009). The use of different communication tools and curriculum may lead science teachers in virtual schools to experience a strong need to utilize their “lingo” to effectively exchange knowledge. Thus, the strong correlation in this study between PSTE and the
eCOP dimension “shared language” may demonstrate a unique exclusivity and connection to a community of practice for teachers in virtual schools.

**Experienced Community of Practice and Personal Science Efficacy Beliefs.** The research noted a positive correlation between a teacher’s’ experiences in a community of practice and STOE. Surveyed teachers reported overall lower STOE scores compared to their PSTE scores ($M = 38.13; SD = 6.82$). However, the average score was slightly above the midpoint of the STOE scale (which ranges from 12 to 60). Lower STOE scores compared to PSTE scores were consistent with numerous research findings (Lakshmanan et al., 2011; Posnanski, 2002; Ramey-Gassert et al., 1998).

Science-teaching outcome expectancy is the belief a science teacher has that effective science-teaching will influence his/her students. The lower STOE scores noted in this study might suggest that the virtual learning environment affects a teachers’ confidence about influencing students. Hawkins, Graham, and Barbour (2012) found that teachers in virtual schools felt isolated and disconnected from their traditional role as teachers. Since these teachers are not able to physically work with students in a traditional setting, they may feel less effective in directly influencing students. Ramsey-Gassert et al. (1998) found that external factors influencing teachers’ STOE scores were variables related to student motivation, school, and workplace, and parents and community. These variables were considered “barriers” to science-teaching. Teachers with lower ranges of STOE scores expected these “barriers” to affect their effectiveness as a science teacher (Ramey-Gassert et al., 1998). They further add that students’ motivation and family variables were related to STOE but did not influence effective science-teaching (PSTE).
The present study found that student motivation is a strong variable that influenced participants’ STOE scores. Students who attend school virtually must learn to self-regulate their learning autonomously. However, research found that students in virtual schools often lack the ability to master their own learning through self-regulation and self-discipline (Cavanaugh, Barbour, & Clark, 2009; Murphy & Rodriguez-Manzanares, 2009; Rice, 2006). Education research suggests that teachers in traditional classrooms play a vital role in motivating students who are less likely to have intrinsic motivation, but teachers in virtual schools may not be able to supply that motivation for their students, which may suggest why teachers in virtual schools reported having a lower STOE.

Teachers in virtual schools may also feel more isolated and less in control of their external factors, and therefore, may report a lower STOE. However, as mentioned in the previous section, the eCoP scores for teachers participating in this study were relatively high ($M = 71.47; SD = 8.81$). The results show a significant statistical relationship between the teachers’ reported eCoP scores and their expected outcomes in science-teaching. There was a significant correlation between the reported STOE scores and the dimension “learning from each other” in the eCoP scale ($p = .031 < .05$). The dimension “learning from each other” has a positive influence on teachers’ STOE because teachers may leverage their chances to learn from each other to mediate learning within a virtual learning environment. Teachers in virtual settings may feel isolated from their traditional role (Hawkins et al., 2012) and can benefit from a community of practice (White, 2010). White suggests that isolated practitioners can still create communities to share knowledge, connect, communicate, learn, and support each other. The high eCoP scores and positive relationship between “learning from each other” suggests that teachers who participated
in this study may be leveraging their learning experiences in the virtual teaching environment in order to overcome the external “barriers.”

**Summary.** The main hypotheses tested in this study were supported as significant relationships were found between experiences within a community of practice and personal science efficacy beliefs and science-teaching outcome expectancy. In addition, as predicted in Hypothesis 2, the eCoP dimension “learning from each other” had a significant relationship to science-teaching outcome expectancy. However, that dimension did not have a significant relationship to the participants’ beliefs in their personal science-teaching efficacy, unlike what was predicted in Hypothesis 2.

The results showed a significant linear statistical relationship between the science teachers’ experiences of community of practice and personal science-teaching efficacy. In addition, the study found that there was also a significant linear statistical relationship between teachers’ community of practice experiences and science-teaching outcome expectancy. The results from this study were aligned with numerous studies that found that higher teaching efficacy leads to more effective science-teaching and higher student achievement (Lumpe et al., 2012; Sinclair et al., 2010). Past research has shown that long-term professional development that includes hands-on experience, scientific experts, master teachers, and experiential applications are positively correlated with teacher content knowledge, teacher science efficacy, and time spent teaching science (Lumpe et al., 2012; NRC, 1996).

**Research Implications**

The present study found a positive correlation between experiences in a community of practice for teachers in virtual classroom settings and their science efficacy beliefs. The majority of the teachers who participated in this study attended initial professional development
mandated professional development ($M = 83\%$), informal professional development ($M = 56\%$), and participated in supported mentorship relationships ($M = 56\%$). While overall eCoP scores were high ($M = 71\%$), ongoing collaboration among members was reported as low ($M = 5\%$). The results indicate a need for continuing professional development, which should focus on online science-teaching pedagogy, practice, and content.

The virtual teaching environment creates a “barrier” that may affect teachers’ confidence in their students’ outcomes. Yoon et al. (2006) found that science teachers’ self-efficacy beliefs had a strong influence on their ability to successfully implement new science curriculum and choose the best instructional practice for effective teaching. Because teachers in this study reported lower levels of confidence in their students’ outcomes (STOE scores: $M = 38\%$), the data suggest that it would be beneficial for school leaders to create a formalized, structured training program, which includes mentorships, formal and informal learning opportunities, and professional time for teacher reflections to increase their science-teaching outcome expectancy. Furthermore, these learning opportunities will increase the community of practice experiences, which may help teachers feel less isolated and reduce external “barriers” to high student outcomes.

The release of the Next Generation Science Standards (NGSS) in April 2013 calls attention to education reforms needed at the national, state, and local levels (Bybee, 2014). The NGSS calls for dramatically reformed science curriculum (NGSS Lead States, 2013). As a result, there are education shifts that teachers must learn in order to successfully implement the NGSS. Such a change in science curriculum may affect their science-teaching efficacy beliefs.

Findings from the present study suggest that school leaders need to provide more opportunities for ongoing science content knowledge training and to maintain an active
community of practice in for teachers who teach science in a virtual environment. Palmer (2011) found that teachers who participated in science professional development reported increased PSTE. In order to become successful in implementing the reformed science curriculum, Palmer recommends that professional development include out-of-school experiences, workshops, mentorships, and apprenticeships with science experts. Because the main science reform shift is in engineering, administrators for virtual schools can invite engineers to participate in the professional development or pair teachers with engineers. In essence, school leaders can provide more opportunities for science teachers in virtual settings to participate in their communities of practice.

Researchers have found communities of practice that focus on teacher collaboration and continuity have a positive effect on teaching efficacy and student achievement (Akerson, Cullen, & Hanson, 2009; Fazio, 2009; Liu, Lee, & Lin, 2010; Vescio et al., 2008). Chase et al. (2001) found that efficacy increased when teachers are involved in an active community of practice, which consists of new teachers, experienced teachers, administrators, mentors, and faculty teacher educators who meet regularly to reflect on their practices. As mentioned in the previous section, results from this study indicated that experiences in a community of practice were correlated to the science-teaching efficacy beliefs of teachers for virtual schools. School leaders, administrators, and policymakers should create a holistic professional development program for such teachers. The program should include training and development of new teachers, continual ongoing professional development for in-service teachers, peer coaching, apprenticeship with experts, and encouragement for teachers in virtual settings to maintain an active community of practice.
Limitations and Considerations

The present study has several limitations. First, the responses were gained through a sample of convenience, and because the sample consists of teachers teaching science in a virtual setting, the study’s findings cannot be generalized to the entire population of science teachers. In addition, the response rate was relatively low \(N = 58\). Bryman (2008) writes:

The key point is to recognize and acknowledge the implications of the possible limitation of a low response rate. On the other hand, if your research is based on a convenience sample, ironically it could be argued that a low response rate is less significant. (p. 220)

Since the present study was gained through a sample of convenience, the response rate is not as important as it would be if the population were nonrandom. Several reasons may be responsible for the survey’s low response rate, including the fact that the survey was lengthy (37 questions with multiple-choice answers). The survey takes about 30 minutes to complete, and unfortunately, teachers received this survey at the end of the school year, a time when they are focused on state proficiency testing, report cards, and preparing to end the school year.

In addition, there were no incentives given to teachers to participate in the study. Researchers have found that the use of incentives significantly increases participation and the tendency for respondents to complete surveys (Bosnjak & Tuten, 2003; Deutskens, Ruyter, Wetzels, & Oosterveld, 2004; Sánchez-Fernández, Muñoz-Leiva, & Montoro-Ríos, 2012). Fan and Yan (2010) also reported that measures that take thirteen minutes or less to complete are ideal for influencing good response rates. Unfortunately, the combination of three instruments in this study created a long survey. The STEBI-A and eCoP remain valid survey instruments; however, for future research, incentives should be given to participants in order to increase response rates and likelihood of survey completion.
Second, the demographic study revealed that participants who completed the surveys are a homogenous sample consisting mostly of females (80%) teaching in a suburban (78%) setting. Therefore, the findings of this study cannot be generalized to the full population of science teachers as factors such as gender, age, and years of teaching science have been demonstrated to affect science efficacy beliefs (Angle & Moseley, 2009; Ramsey-Gassert et al., 1998). It would be beneficial for future research to examine a larger, more diverse sample in order to yield responses that may be used to generalize how experience of community of practice affects teachers’ science efficacy beliefs and outcomes.

Third, the present research is only examining correlations between variables; therefore the data cannot identify causation. While the present research found a positive linear relationship between teachers’ experiences within a community of practice and their beliefs about science-teaching efficacy and student outcomes, we cannot conclude that a community of practice was directly responsible for their scores. A qualitative approach may be useful in better understanding the dynamics between community of practice and efficacy beliefs.

Fourth, the present study utilized surveys to collect data. For this dissertation study, the surveys were the most efficient and cost-effective way to collect data, and the instruments used have demonstrated reliability and validity. But self-reporting can be problematic as there may be social desirability bias. In addition, another limitation is self-selection, there is a reasonable likelihood that teachers who participated in the study were more involved in the community of practice and may have higher personal science efficacy beliefs, which may skew the findings. Also, the measures used to gauge experiences of community of practice are relatively new; therefore, repeated studies utilizing the measures are recommended.
Future Research

Possible future research could examine the virtual teaching environment through a mixed-method approach. While quantitative research provides useful data to understand the relationship between community of practice experiences and science efficacy beliefs, qualitative research can provide a deeper understanding of why teachers for virtual classrooms hold their efficacy beliefs and what experiences they have in communities of practice. Since the researcher did not ask open-ended questions, there are future opportunities to explore the relationship between communities of practice and science-teaching efficacy beliefs through both surveys and interviews.

In addition, longitudinal research would be useful in providing a more comprehensive understanding of the beliefs and experiences of science teachers for virtual schools. Since the present research collected data for one snapshot of those teachers’ beliefs and experiences, it may not be an accurate representation of their average science-teaching practices. While the instrument asked participants for their “typical” and “average” beliefs and experience, teachers may respond differently in the beginning of the year compared to the end of the year. A longitudinal research study could provide a pre- and post-school-year comparison of eCoP and STEBI-A scores. This data may provide school leaders and stakeholders with information to help them implement, improve, and modify professional development activities in order to enhance the confidence and outcomes for science teachers in virtual settings.

With the rapid growth of virtual schools, it might be beneficial for other virtual learning communities to replicate the study. Because the present study examined only one education management organization, data cannot be generalized to the entire population of teachers in virtual settings. It would be beneficial for future research studies to examine a larger sample size
to see if the results are similar to those in this study. Furthermore, since teachers in virtual settings reported to having a lower STOE for this present study, it may be beneficial to examine a hybrid online program and traditional online program. The comparative study may provide useful data that could be used to design training programs and ongoing professional developments for those types of schools. In addition, future research can examine teachers with less experience in the science-teaching community; there may be implications that teachers with less experience may be more likely to rely on their community of practice to learn from each other.

**Conclusion**

The goal of this study was to examine the relationships between the experiences within a community of practice for teachers in virtual schools and their science-teaching efficacy beliefs. With the rapid growth of virtual schools, the roles and responsibilities of teachers in those schools are quickly evolving. In this study, it has been shown that community of practice experiences for science teachers in virtual settings are positively correlated with higher ratings of science-teaching efficacy skills. These results provided insights about those teachers’ experiences with communities of practice, which may lead to improvements in student science achievement for their students. In addition, the study added to the understanding of how factors within a community of practice could affect the science-teaching efficacy of teachers in virtual settings. It is imperative that school districts, administrators, and stakeholders in the success of instructional strategies examine and develop professional learning opportunities to support teachers in virtual K–12 settings.

In conclusion, results of this study indicate a need for school leaders and stakeholders to create professional development programs that are grounded in social constructivist theoretical
frameworks. The results from this study are in line with numerous research studies that have found that teachers who are involved in a community of practice report higher science-teaching efficacy beliefs (Fazio, 2009; Lakshmanan et al., 2011; Liu et al., 2010; Sinclair et al., 2010). School leaders should create programs that: (a) are long-term; (b) are offered continually; (c) are collaborative and involve activities between teachers, peer coaches, and school leaders; (d) create partnerships with science expert practitioners; (e) utilize professional development activities that are rooted in developing science self-efficacy beliefs; (e) promote the use of social networking sites to support the community of practice; (f) include opportunities for teacher self-reflection. In addition, leaders need to collect and obtain STEBI-A and eCoP reflections on a quarterly basis to analyze the effectiveness of professional development programs, which can help school leaders assess and analyze the effectiveness of the ongoing programs.

Future research will add to a growing body of knowledge related to teachers’ science-teaching efficacy beliefs and of virtual teaching settings. That research can lead to improvements in science-teaching efficacy beliefs, student achievement, professional development, and community of practice experiences for teachers, and to ideas about the development of better science-inquiry curricula.
REFERENCES


Appendix A

Permission from Dr. Mangieri

From: [Redacted]

Sent: Wednesday, June 05, 2013 6:20 AM

To: [Redacted] (student)

Subject: Re: Demographic Survey

Yes, Phuong, you have my permission to use and modify my demographic survey from my dissertation.

Thank you,

[Redacted]
Appendix B

Demographic Questions

1. Indicate the community setting for your online teaching position:
   a. Suburban
   b. Urban
   c. Rural

2. Indicate your years of face-to-face teaching experience:
   a. Less than one year
   b. One to four
   c. Five to nine
   d. More than ten

3. Indicate your years of online teaching experience:
   a. Less than one year
   b. One to four
   c. Five to nine
   d. More than ten

4. Indicate the primary content area for your online teaching position with the education management company:
   a. English
   b. Math
   c. Science
   d. Social science
   e. Foreign language
   f. Elective

5. Identify the types of professional development for online teaching you have received (select all that apply):
   a. Initial training for online pedagogy
   b. Initial training for technology such as course management system (CMS)
   c. Supported mentorship
   d. Mandatory formal online professional development workshops
   e. Optional formal professional development workshops
   f. Informal professional development (such as reading relevant books and journal articles, participating in chat groups or discussion forums aimed at online teachers)

6. Enter the grade level/levels in which you are teaching science: _____

7. Please provide the following personal information (optional):
   Gender:
   a. Male
   b. Female
Appendix C

Experienced Community of Practice (eCoP) Scale

Items

Open Communication

cop.1: I feel comfortable communicating freely with others in my technical specialty.
cop.2: In my technical specialty there is an open environment for free communication.
cop.3: It is easy to communicate with others in my technical specialty.

Shared Vocabulary

cop.4: My technical specialty has a unique vocabulary.
cop.5: There is a common understanding within my technical specialty of the words and meanings that are used within the technical specialty.
cop.6: People outside my technical specialty might have difficulty understanding the vocabulary members of my technical specialty use to talk about the technology.

Remembering Previous Lessons

cop.7: Collaborating with other members of my technical specialty helps me remember things that we have learned.
cop.8: Participating in meetings with members of my technical specialty helps me to remember things that we have learned.
cop.9: Lessons learned from past experiences shared within my technical specialty are easily remembered.

Learning From Each Other

cop.10: I interact with others in my technical specialty with the intention of learning from them.
cop.11: I learn new skills and knowledge from collaborating with others in my technical specialty.
cop.12: Learning is shared among members of my technical specialty.
Appendix D

Science-Teaching Efficacy Instrument-A (STEBI-A)

Science Teaching Efficacy Belief Instrument*

Please indicate the degree to which you agree or disagree with each statement below by circling the appropriate letters to the right of each statement.

<p>| | | | | |</p>
<table>
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<tr>
<td>SA</td>
<td>A</td>
<td>UN</td>
<td>D</td>
<td>SD</td>
</tr>
<tr>
<td>Strongly Agree</td>
<td>Agree</td>
<td>Uncertain</td>
<td>Disagree</td>
<td>Strongly Disagree</td>
</tr>
</tbody>
</table>

1. When a student does better than usual in science, it is often because the teacher exerted a little extra effort.  

2. I am continually finding better ways to teach science.  

3. Even when I try very hard, I don't teach science as well as I do most subjects.  

4. When the science grades of students improve, it is most often due to their teacher having found a more effective teaching approach.  

5. I know the steps necessary to teach science concepts effectively.  

6. I am not very effective in monitoring science experiments.  

7. If students are underachieving in science, it is most likely due to ineffective science teaching.  

8. I generally teach science ineffectively.  

9. The inadequacy of a student's science background can be overcome by good teaching.  

10. The low science achievement of some students cannot generally be blamed on their teachers.  

11. When a low achieving child progresses in science, it is usually due to extra attention given by the teacher.  

12. I understand science concepts well enough to be effective in teaching elementary science.  

13. Increased effort in science teaching produces little change in some students' science achievement.  

14. The teacher is generally responsible for the achievement of students in science.  

15. Students' achievement in science is directly related to their teacher's effectiveness in science teaching.  

16. If parents comment that their child is showing more interest in science at school, it is probably due to the performance of the child's teacher.  

17. I find it difficult to explain to students why science experiments work.  

18. I am typically able to answer students' science questions.  

19. I wonder if I have the necessary skills to teach science.  

20. Effectiveness in science teaching has little influence on the achievement of students with low motivation.  

21. Given a choice, I would not invite the principal to evaluate my science teaching.  

22. When a student has difficulty understanding a science concept, I am usually at a loss as to how to help the student understand it better.  

23. When teaching science, I usually welcome student questions.  

24. I don't know what to do to turn students on to science.  

25. Even teachers with good science teaching abilities cannot help some kids learn science.  

Appendix E

Correspondence With Education Management Company

March 7, 2014

To Pepperdine University Institutional Review Board:

The purpose of this letter is to inform you that I give permission to conduct the research titled Virtual School Teachers’ Science Efficacy Beliefs: The Effects of Community of Practice on Science Teaching Efficacy at Inc.

Sincerely,

Director of Academic Services
Appendix F

IRB Approval

PEPPERDINE UNIVERSITY

Graduate & Professional Schools Institutional Review Board

April 16, 2014

Protocol #: E1113D05
Project Title: Virtual School Teachers’ Science Efficacy Beliefs: The Effects of Community of Practice on Science Teaching Efficacy Beliefs

Dear Ms. [Redacted]:

Thank you for submitting your application, Virtual School Teachers’ Science Efficacy Beliefs: The Effects of Community of Practice on Science Teaching Efficacy Beliefs, for exempt review to Pepperdine University’s Graduate and Professional Schools Institutional Review Board (GPS IRB). The IRB appreciates the work you and your faculty advisor, Dr. Sparks, have done on the proposal. The IRB has reviewed your submitted IRB application and all ancillary materials. Upon review, the IRB has determined that the above entitled project meets the requirements for exemption under the federal regulations (45 CFR 46 - http://www��ntraining.com/ohsrsite/guidelines/45cftr46.html) that govern the protections of human subjects. Specifically, section 45 CFR 46.101(b)(2) states:

(b) Unless otherwise required by Department or Agency heads, research activities in which the only involvement of human subjects will be in one or more of the following categories are exempt from this policy:

Category (2) of 45 CFR 46.101, research involving the use of educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures or observation of public behavior, unless: a) Information obtained is recorded in such a manner that human subjects can be identified, directly or through identifiers linked to the subjects; and b) any disclosure of the human subjects’ responses outside the research could reasonably place the subjects at risk of criminal or civil liability or be damaging to the subjects’ financial standing, employability, or reputation.

In addition, your application to waive documentation of consent, as indicated in your Application for Waiver or Alteration of Informed Consent Procedures form has been approved.

Your research must be conducted according to the proposal that was submitted to the IRB. If changes to the approved protocol occur, a revised protocol must be reviewed and approved by the IRB before implementation. For any proposed changes in your research protocol, please submit a Request for Modification Form to the GPS IRB. Because your study falls under exemption, there is no requirement for continuing IRB review of your project. Please be aware that changes to your protocol may prevent the research from qualifying for exemption from 45 CFR 46.101 and require submission of a new IRB application or other materials to the GPS IRB.

A goal of the IRB is to prevent negative occurrences during any research study. However, despite our best intent, unforeseen circumstances or events may arise during the research. If an unexpected situation or adverse event happens during your investigation, please notify the GPS IRB as soon as possible. We will ask for a complete explanation of the event and your response. Other actions also may be required depending on the nature of the event. Details regarding the timeframe in which adverse events must be reported to the GPS IRB and the appropriate form to be used to report this information can be found in the Pepperdine University Protection of Human Participants in Research, Policies and Procedures Manual (see link to “policy material” at http://www.pepperdine.edu/irb/graduate/).

6100 Center Drive, Los Angeles, California 90045  •  310-568-5600
Please refer to the protocol number denoted above in all further communication or correspondence related to this approval. Should you have additional questions, please contact Kevin Collins, Manager of the Institutional Review Board (IRB) at gpsirb@peppderdine.edu. On behalf of the GPS IRB, I wish you success in this scholarly pursuit.

Sincerely,

[Redacted]

[Redacted]

Chair, Graduate and Professional Schools IRB

cc: [Redacted]
Appendix G

Teacher Informed Consent Screen

Title of Research: Virtual School Teachers’ Science Efficacy Beliefs: The Effects Of Community of Practice On Science-Teaching Efficacy Beliefs Link

Investigator: Phuong Pham Uzoff, Pepperdine University

My name is Phuong Pham Uzoff, and I am a doctoral student at Pepperdine University. I am conducting my dissertation study regarding community of practice, science-teaching efficacy, and science teaching beliefs of virtual science teachers. As a teacher, I am well aware of how precious your time is, and I greatly appreciate your participation.

Before agreeing to participate in this research study, it is important that you read the following explanation of this study. The research study is being conducted as a partial requirement of the doctoral program. This statement describes the purpose, procedures, benefits, risks, discomforts, and precautions of the program. Also described are the alternative procedures available to you, as well as your right to withdraw from the study at any time. No guarantees or assurances can be made as to the results of the study.

Explanation of Procedures
You will be asked to complete a web survey that will take you approximately 30 minutes to complete.

Risks and Discomforts
There is minimal risk: the only potential risk identified with participation in this study will be the personal time you will invest in taking the survey. No compensation or medical treatments are available if injury occurs.

Benefits
There are no direct benefits from participation in this study; however, the benefits to the education profession may include a better understanding of how being part of a community of practice affects science-teaching efficacy and science teaching beliefs. It is hoped the results of this study can be used for professional development, collaboration, and instructional purposes.

Anonymity
All information and data collected during this study will be completely anonymous. No identifiable information about your identity will be collected in this study. The researcher will have access to the reported data, which will be kept in a password-protected file on an external hard drive for in a locked file cabinet to which only the researcher has access. All research materials will be kept for a period of five years and then destroyed.

Withdrawal Without Prejudice
**Participation is voluntary and you may choose not to complete the study.** There will be no penalty or loss of benefits if you decline or discontinue participation at anytime during the study.

**Costs and/or Payments to Subject for Participation in Research**
There will be no costs for participating in the research. Also, participants will not be paid to participate in this research project.

**Questions**
If you have any questions concerning the research you can contact Phuong Pham Uzoff, phuong.pham@pepperdine.edu, 310–883–4356. You may also contact my dissertation chairperson, Dr. Paul Sparks, Pepperdine University Graduate School of Education and Psychology, 6100 Center Drive, Los Angeles, CA 90045, paul.sparks@pepperdine.edu. If you have any questions regarding your rights as a participant, please contact Chairperson of the Graduate and Professional Schools Institutional Review Board, Dr. Thema Bryant-Davis Pepperdine University, Graduate School of Professional Schools of Institutional Review Board, Pepperdine University, Graduate School of Education and Psychology, 6100 Center Drive, Los Angeles, CA 900045, thema.bryant-davis@pepperdine.edu.

**Agreement**
By clicking the survey web link below, you are acknowledging that you have read and understand what your study participation entails and are consenting to participate in the study.

**Virtual School Teachers’ Science Efficacy Beliefs: The Effects Of Community of Practice On Science-Teaching Efficacy Beliefs Link**

After 2 weeks, a reminder note will be sent to you to complete and return the survey. Since this email will go out to everyone, I apologize ahead of time for sending you these reminders if you have complied with the deadline.
Appendix H

Permission from Dr. Enochs to use STEBI-A Instrument

From: [email]
Sent: Thursday, February 28, 2013 11:30 AM
To: Pham, Phuong (student)
Cc: [email]; [email]
Subject: Re: STEBI-A request for use

You certainly may use the instruments as presented in the publications. If you have further questions feel free to contact me.

Professional Address:

[Redacted]
Professor Emeritus
Science and Mathematics Education

http://smed.science.oregonstate.edu/node/42
Appendix I

Reminder Email

Dear Teacher,

Recently you received an email with a link to a survey that requests your participation in a research study that I am conducting. This email is a follow-up reminder asking for your assistance in completing the web survey. If you have already completed the survey, please disregard this email.

Please click on the following link to complete the survey:

Virtual School Teachers’ Science Efficacy Beliefs: The Effects Of Community of Practice On Science-Teaching Efficacy Beliefs Link

Thank you for your participation and support.

Sincerely,

[Redacted]
Appendix J

Copyright Permission From Dr. Etienne Wenger-Trayner

Sent:
Tuesday, October 15, 2013 3:00 PM

To:
Pham, Phuong (student)

Dear Phuong Pham

Yes, you are welcome to use those graphs/figures.

Good luck with your dissertation.
Appendix K

Permission to Use Experienced Community of Practice Scale

PsycTESTS Citation:


Test Shown: Full

Test Format:

A 7-point Likert-type scale for each of the Experienced Community of Practice Scale items was utilized, anchored from 1 = strongly disagree to 7 = strongly agree.

Source:


Permissions:

Test content may be reproduced and used for non-commercial research and educational purposes without seeking written permission. Distribution must be controlled, meaning only to the participants engaged in the research or enrolled in the educational activity. Any other type of reproduction or distribution of test content is not authorized without written permission from the author and publisher.
Community Life Counseling Center:

The evolution of a counselor training facility

Marta Garrett with H. Ty Leonard and Jason Martin

University of Mary Hardin-Baylor

Author Note

Marta Garrett, is an Associate Professor and Director of the Graduate Counseling Program. H. Ty Leonard is an Associate Professor and served as the Community Life Counseling Center Director for 8 years. Jason Martin is an Assistant Professor and current Director of the Community Life Counseling Center, University of Mary Hardin-Baylor. Correspondence concerning this article should be addressed to Marta Garrett, Director of the Graduate Counseling Program, University of Mary Hardin-Baylor, 900 College Street, Box 8006A, Belton, TX 76513 (e-mail: mgarrett@umhb.edu).
Abstract

Master's level counselor education programs typically require hands-on practicum and internship courses to enhance the development of students' counseling skills. Many programs use on-campus training facilities to observe student-counselors with real clients because this allows faculty to provide close supervision while they monitor the skill development of their counseling students. Creating a facility to enable these kinds of training opportunities requires considerable business and management knowledge and skills beyond the expertise of most counselor educators. Additionally, this type of facility demands a substantial initial and on-going budget allocation for space, personnel, equipment and training. This case study describes the evolutionary process of the Community Life Counseling Center (CLC) – the counseling training facility of a small, private religiously-affiliated university in Central Texas. This case study discusses the conception of the CLC more than a decade ago to fully-operational status today. Over the last nine years this facility has evolved and developed and is now a well-known and well-respected counseling clinic in the local community having been used to provide more than 11,000 clients sessions.

Keywords: community clinic, counselor education, training center
Community Life Counseling Center:
The evolution of a counselor training facility

Introduction

This article discusses the need for on-campus counselor training facilities and the evolution of one such training facility, the Community Life Counseling Center (the CLC), which was designed to support the training needs of a master’s level counseling program at a small, private, Christian university in Central Texas. The CLC was specifically designed to meet the training needs of the Graduate Counseling Program at University of Mary Hardin-Baylor (UMHB) which currently offers two 60-credit master’s programs in counseling – one in Clinical Mental Health Counseling (accredited by the Council for Accreditation of Counseling and Related Educational Programs [CACREP] since 2004 [originally accredited as a Community Counseling Program]), and one in Marriage, Family, & Child Counseling (currently seeking CACREP accreditation). The Community Life Counseling Center (the CLC) first opened on the edge of the UMHB campus in Belton, Texas, in August, 2005. Over the last nine and a half years, the CLC has provided counselor training opportunities for more 200 graduate counseling students and has made more than 11,000 free or nearly free counseling sessions available to clients in the community who might not otherwise have been able to afford mental health services.

Much of the history and details of the early evolution of the CLC was gathered in a series of interviews and discussion during the Fall 2013 and Spring 2014, with Dr. Raylene Statz, now retired, who served as the former Graduate Counseling Department Program Chair for more than a decade, and Dr. H. Ty Leonard, Associate Professor, and initial Director of the Community Life Center (who served in this role for eight years). More recent information regarding changes
and future directions for the CLC was gathered from Dr. Jason Martin, Assistant Professor, who serves as the current Director of the CLC (since August, 2013).

**Background**

The master’s level degree is generally viewed as the practitioner’s degree in the mental health field providing the vast majority of independently licensed mental health practitioners in the country (for example, there are approximately 26,000 independently-licensed master's level practitioners in Texas alone, and roughly 375,000 in the United States [American Counseling Association, 2011]). Training these master's level practitioners requires more than classroom instruction. Within the counseling profession, there is an expectation that graduates are capable of working with a variety of clients at the time they graduate (Engels, Barrio Minton, Ray, & Associates, 2010; also see counseling position descriptions posted on various job search websites). This level of ability requires significant hands-on training and skill development while in graduate school, under the close supervision of faculty. Typically, this advanced training is addressed through a series of two to four semesters of practicum or internship at the end of graduate study where students are provided with the opportunity to work with increasingly demanding clinical presenting issues under the supervision of a licensed faculty member (e.g., Graduate Counseling Program Requirements, 2014; Texas State Board of Professional Counselors, 2014).

In addition to the stated expectations regarding competencies and performance for professional counseling students and graduates (e.g., Engels, Barrio Minton, Ray, & Associates, 2010), this need for hands-on experience and training in counselor education is further emphasized by the accepted standards of ethical practice in the counseling profession (ACA, 2014; National Board of Certified Counselors [NBCC], 2012). The primary accrediting body
for the counseling profession (CACREP) mandates professional training opportunities be made available to counseling students within accredited counselor education programs (CACREP, 2009). While this accrediting body does not specifically require training programs maintain or operate an on-campus clinic for training purposes, the accreditation standards clearly address the need for training under close faculty supervision (for example, the opportunity to view taped counseling sessions and/or provide live supervision for counseling students [CACREP, 2009]). When a counselor education program relies on an off-campus site for training opportunities, they can face issues with inconsistency or lack of adequate supervision. Thus as counselor education programs grow, they often prefer to manage their own training environments so that they can ensure students are getting the widest variety of clinical experiences under appropriate supervision.

Institutions generally follow one of two models of operating a counselor training facility on campus: a university counseling center that serves the counseling needs of the undergraduate student body; or an outreach-based counseling center that serves the counseling needs of members of the larger community and not the university student body (Henderson, 2010; Mobley & Myers, 2010). Historically, programs that train master’s level practitioners primarily have chosen to offer services to community residents to avoid potential conflicts of interest and dual relationships with undergraduate students on campus (Mobley & Myers, 2010).

As accreditation of counseling training programs has become increasingly necessary for competitive job placement of graduates (Department of Defense, 2014), more training programs are seeking accreditation than ever before (CACREP, 2013). Currently there are 29 master’s level counseling programs accredited by CACREP in Texas (CACREP, n.d.) and this number will likely to continue to grow in coming years. One of the larger obstacles for programs who
wish to pursue national accreditation is the need to design, staff, manage, and fund a facility to adequately train their counseling students. This is particularly an issue for smaller, private, or religious institutions who are generally not able to rely on grants or funding from the state or federal government.

**Community and cultural influences on the CLC**

A deep understanding of local and institutional culture is paramount to creating a thriving counselor training facility. The history and culture of the Belton community and UMHB as an institution had a significant influence on the development of the Graduate Counseling Program and the affiliated counselor training facility, the Community Life Counseling Center. Belton, Texas is approximately a one hour north of Austin and one hour south of Waco. Fort Hood, the nation's largest military installation, lies directly to the west of Belton and has significant influence on the local area both in culture and in job opportunities. Belton is a small but rapidly expanding bedroom community in Central Texas. Over the last decade Belton has grown from a few thousand residents to now just under 20,000 people. In the area surrounding Belton (30 minute drive each direction), there are approximately 250,000 people [City-data.com, 2014]).

UMHB originated as a "sister college" to Baylor University in 1845 and remained a women's institution until 1974 (*Our history*, n.d.). UMHB (like the larger, more well-known, Baylor University) is affiliated with the Baptist General Convention of Texas. While these two institutions share similar historical experiences and structures, UMHB is perhaps considered more conservative than Baylor (as Baylor University went co-educational much earlier in its history). Today, UMHB has approximately 3,700 students - predominantly undergraduate students.
UMHB's Graduate Counseling Program first started as an extension of the undergraduate psychology department. As graduate level training became the norm for community-based counselors, the graduate program separated from the undergraduate department and began to focus more on counselor education. When the Graduate Counseling & Psychology program was formed the faculty retained only graduate level teaching responsibilities - making it the first and only stand-alone graduate educational program on the UMHB campus. At that time, the Department primarily offered graduate level programs that led to the Licensed Professional Counselor (LPC) credential and to certification in School Counseling (additionally, the Department retained a non-licensure track that had started as a preparatory track for students who wished to pursue doctoral education). As the Licensed Professional Counselor (LPC) credential became the license of choice for master's level practitioners in Texas, the decision was made to emphasize counselor education programs rather than psychology programs. Today, the Clinical Mental Health Counseling track (preparing graduates to apply for the LPC) remains the strongest and largest of the programs offered in the Graduate Counseling Program (accounting for more than 75% of the Department’s enrolled students).

When the Department decided to pursue national accreditation with CACREP, the remaining tracks that led to psychology credentialing were dropped and the faculty began to pursue a training facility to address the specific skill-development needs of counselors. Over time, several additional changes were made in the focus of the degrees offered by the Department to meet the changing needs of the local economy and job market. The Department added a second clinical focus in marriage and family counseling (initially this was offered with a Christian emphasis to complement the over-arching mission of the institution). Later, the Graduate Counseling Program dropped the word psychology from its title in an effort to better
emphasize its connection to the counselor education field. Still later, a second marriage and family track (with additional coursework in counseling children) was added in order to pursue national accreditation in the marriage and family field. And, most recently, the Academic Specialization track (that does not lead to clinical licensure) was renamed to clarify its purpose as a non-clinical professional studies program (see Figure 1 below for additional detail).

Figure 1. Time line of curricular changes in the Graduate Counseling Program

![Timeline of curricular changes](image)

Laying the groundwork for the CLC

The decision to move forward with plans to open the Community Life Counseling Center required significant preparatory work and planning. The Graduate Counseling Department prepared a lengthy proposal to demonstrate the need for the training facility to administrators. This proposal required describing the rationale for the training facility in detail - describing the need for the facility from both the counselor education standpoint as well as the potential benefit of adding an additional source for mental health care needs in the community. Budgeting issues
were considered to include the added demand on faculty, space, and facilities. Legal advice was sought to determine how to best minimize any possible risks to the institution. Support was sought from faculty, administrators, and the institution's Board of Trustees. Additionally, support was solicited from local churches and mental health providers to ensure future referrals. This pre-planning phase of the development of the CLC occurred over approximately a two year period of time.

Once approvals had been granted, an appropriate site was selected on the edge of campus to best meet the needs of the potential clients (transportation, easy to access from off campus, etc.). An older residence on the edge of campus was selected because of its location, size, price, and the desire to have a “homey” environment for the CLC (as opposed to a more sterile classroom-like building). Renovations to the building were required to make the building more suitable for client sessions. During the renovations and before opening the facility, all the client-based paperwork and processes were prearranged to minimize any potential surprises and risk. An advertising campaign was launched to announce to the community the purpose of the CLC and to bring in new clients. Finally, an open house was held and the Community Life Center was officially open for business in August, 2005.

The Community Life Counseling Center has been in operation three to four week days each week since August, 2005. CLC operating hours have been adjusted to meet demands based on the number of students enrolled in practicum and/or internship each semester. Initially, the CLC was open even during the semester breaks and over the Christmas holiday and Spring break; however more recently with a better understanding of client needs and other available resources in the area the CLC now has regularly scheduled closures for holidays and between semesters.
Budgeting issues

Considerable effort was made to estimate the expenses of opening and operating a community-based mental health center to train counseling students. However, as might be anticipated, this is almost an impossible task. With constantly changing dynamics such as variable student enrollments, changes in accrediting standards, changes in licensing requirements, developing technology in the field, and fluctuations of clients, the unknown factors clearly outweigh the known factors in managing this type of a training clinic. Despite researching and querying similar clinics and training programs about the potential costs involved, much of the necessary information regarding budgeting and managing this type of clinic came only with experience.

At the time the Community Life Counseling Center was opened, monies were budgeted for procuring a space (about 1,800 square feet) and renovating the space to include moving walls, upgrading wiring, and adding interior doors for privacy and security (see Appendix for pictures and floor plans). An initial outlay for videotaping equipment was budgeted at approximately $5,000. No additional faculty or staff lines were initially pursued. The remainder of the needed monies and materials were acquired through donations (to include furniture and other equipment such as toys for the play room). In recent years, significant additional funding has been added to the CLC operating budget for upgrading safety features and technology (both described in greater detail below).

The CLC was designed as a training facility and was never intended to be profitable. The administration of the University considers the services provided by the CLC as one of the many ways the institution gives back to the larger community (which is closely tied to the institutional mission and philosophy). The CLC does not accept any form of insurance which simplifies
many of the paperwork and money processes involved). It operates as a cash-and-carry business utilizing a sliding scale for services (from free to $20 per session). Student counselors come to a fee agreement during the intake process based on the client's ability to pay. If a client is unable to pay for services, the fees may be waived entirely, but clients are encouraged to pay something for their counseling (even if it is a nominal fee) because negotiating fees in counseling and paying for these services helps encourage client commitment to the therapeutic process, helps clients value the counseling services they receive, and promotes professional boundaries (e.g., Gutheil & Gabbard, 1993). All monies that are generated from CLC services go back to the general operating fund of the institution.

**Staffing**

As described above, when the CLC first opened in 2005, there was no dedicated faculty line or course reduction provided for the director. This was a sacrifice that was needed to gain the support of the administration (R. Statz, personal communication, October, 10, 2013). The position of director was given to a tenure-track junior faculty member who retained all regular faculty duties (to include a full-time graduate teaching load, research, office hours, university committee duties, etc.). The Director was expected to be on-site at the CLC at any time that students were seeing clients. In the event that class or other commitments made this impossible, other faculty would "sub" for the Director to provide required on-site supervision coverage. Unfortunately, in the early years of the CLC's operation, there were no added clinical adjunct positions funded or office/support staff positions available for the CLC.

For the first several years of operation, the CLC was essentially manned by a single faculty member - requiring an average of 60 or more hours a week. As the graduate counseling program grew, so did the demands on the CLC director. This burden quickly became
unmanageable and the CLC director was able to successfully lobby for, and acquire, first one and then a second part-time clinical faculty. These two part-time clinical faculty were hired as adjuncts initially being paid the equivalent of teaching one graduate level counseling course for approximately 20 hours of supervision work at the CLC each week during the semester.

In the early years, with no administrative support staff available, counseling students enrolled in practicum or internship were required to be available for administrative duties at the CLC (e.g., answering client inquiries, booking appointments, etc.). After the CLC had been open a couple of years the Director was able to successfully lobby for and acquire student worker assistance (graduate level student employees paid minimum wage who worked as administrative help at the CLC). By the seventh year of operation, the CLC had two student workers (each working approximately 12 hours a week). This assistance allowed for a smoother client-referral process and provided someone to greet new clients so that the clinical staff were not interrupted from their primary role of providing live supervision for counseling sessions.

**Continuing Evolution of the CLC**

**Furnishings.** Furnishings for this type of facility can be a costly endeavor to balance client comfort needs as well as durability. Over time, most of the donated furnishings in the CLC have been replaced with new and more generically appealing items (see Appendix for more detail). In this process, the overall decor of the CLC was updated to appeal to a broader group of potential clients. Consistency in furnishing between rooms was desired for both client comfort (should clients not be seen in the same room each session), and also for flexibility. For example, the group room chairs were replaced with roller chairs to allow more flexibility in how and where they can be used (they can be added to other counseling rooms for couples or larger family sessions or to seat an additional counseling student if needed in co-therapy).
In an effort to be able to better serve the growing number of child clients that are seen at the CLC, the play therapy room is currently being redesigned and moved to a less-central portion of the CLC for noise abatement. Old, worn out, or infrequently used play items have been removed, upgraded, and re-stocked. A substantial financial investment has been budgeted for this endeavor over the next three fiscal years. The sandtray room is also in the process of being converted to a more child-friendly space (currently it is used only for adolescents and adults due to safety issues with the shelving and the sandtray stand).

Due to the age of the CLC facility and the shapes of some of the counseling rooms, sound issues (e.g., echoes from the nine-foot ceilings, difficulty picking up soft voices on the microphones, etc.) continue to be a challenge. This has required multiple installations and adjustments of the recording equipment which can be costly; the installation of shag area rugs and sound panels in most of the rooms to absorb sound - also an added unplanned expense and the addition of white noise machines.

**Staffing.** Within a few years of opening the CLC, it became apparent that it was an unfair burden to place all the responsibility for managing the clinic on one faculty member. Attempts were made to divvy up the responsibilities of the Director position, but these were unsuccessful as it was a challenge to partition and delegate these kinds of duties while maintaining stability of policies and practices. To ensure students received consistent and adequate supervision and that client safety was not compromised, the Director essentially performed two full-time positions until the administration came to understand the need for a separate and new faculty line for a clinic director. Once budgeting for a new clinic director was approved, it took nearly a year to advertise and hire this position.
Currently, the CLC Director’s position is a nine-month, tenure-track regular faculty position (it is not designated as clinical faculty). The CLC Director position requires a minimum of 30 hours a week at the CLC and comes with a significantly reduced teaching load (the CLC Director teaches only one practicum or internship course each fall and spring). Because the CLC is open year-round, the CLC Director is paid by a separate contract for duties during the summer months. The CLC Director also has the ability to adjunct coverage hours at the CLC with the two part-time clinical faculty as described above (however, these clinical adjuncts now work 12-15 hours a week [versus the earlier 20 hours] for the equivalent pay of teaching one graduate level course). Thus, during the busier semester when practicum is being taught (during practicum, students gain all of their experience hours at the CLC and practicum students typically require more supervision than more advanced internship students), the CLC is staffed by the CLC Director and both of the clinical faculty. In the remaining two semesters, when the CLC is being used by internship students (who are required to gain most of their supervised experience at off-campus, community-based sites), the CLC Director augments coverage at the CLC with one of the two part-time clinical faculty (these two clinicians alternate semesters so they each work 2 of the 3 semesters per calendar year). In terms of student support staff, the CLC now has 2 student workers (as described above) who each work 12 hours per week at the CLC for minimum wage; and one Graduate Assistant (GA), assigned to support the CLC with 15 hours a week (the GA position also comes with partial tuition remission).

**Technology.** The initial design for viewing and recording student counseling sessions included ceiling mounted cameras and microphones in each of the four counseling rooms which were attached to VHS recorders and television sets in the viewing room. Over the years, several updates were made to this recording and viewing system (as was required due to changes in
technology and failures in the recording processes). Within a few years, the VHS format became obsolete and the system was overhauled to rely on DVDs.

In 2013, when the new CLC Director was hired, the administration also supported a major modernization of the CLC facilities to include significant renovations and technology updates (see Appendix for details and photos). At this time, the overall space in the CLC was redesigned to allocate six counseling rooms in what had previously been used for four counseling rooms. Additionally, the back hallway space was also equipped for session viewing and recording to allow it to be used for group counseling sessions, if needed. Space was taken from the large waiting area to create a new, smaller receptionist area. The previous receptionist area (which had been larger than actually needed) was redesigned to be used as a student-counselor work space and outfitted with five new computer works stations so students could work on client notes and files on site.

Considerable effort has been made to continually upgrade the technology used at the CLC to ensure students are gaining technological competencies as is expected in the counselor education field and will be expected of them in the counseling field (Jencius, Poynton, & Patrick, 2007). During the renovations and enhancements made to the CLC in 2013, all of the session taping and recording equipment was upgraded to digital format. This included digital recording equipment for seven counseling spaces as well as six digital viewing stations in the supervision and viewing room (the seventh space, the group room, is only used when the back two counseling rooms are not in use, thus no more than 6 sessions can take place at one time). In addition to the purchase of all new recording and viewing equipment, upgrading digital required complete rewiring of the CLC facility. Finally, two large-screen televisions were added (one to the CLC Director's office, and one in the viewing room). These two additional viewing stations
allow faculty supervisors to view all seven session rooms at the same time (with our new NICE system [see NICE, n.d. for additional detail]), or to focus on one session and play this session to provide live supervision lessons with students in the viewing room (or in the Director's office).

In order to comply with advances in the profession and new recommendations regarding electronic health records (EHR), a new digital recordkeeping and client scheduling program was purchased for the CLC in 2013 (see Titanium, n.d.). This upgrade required a substantial budget allotment as well as on-going financial support for yearly maintenance fees; however, the faculty felt this has been balanced by the ability to adequately prepare students for similar technology they will face in off-campus internship sites and later in employment (Jencius, Poynton, & Patrick, 2007). As part of this technological upgrade, a client input-station was added next to the receptionist center - so new clients can enter their own intake data into the system. Student counselors can pull this data up on a tablet computer which they can take into the intake with them. This digitalization of the records and processes at the CLC has helped reduce the risk of accidental breeches by limiting paper records.

**Safety.** As times have changed, so has the need to upgrade safety features in the CLC. Due to the increased need for safety planning across all universities, the CLC now undergoes a yearly safety inspection to ensure the facility maintains readiness for the variety of potential crises and emergencies that could arise there at any time. CLC faculty and staff are now trained regarding safety issues specific to the CLC every fall. Over the last two years, several new CLC procedures were implemented to increase the safety of CLC operations: All new practicum students now undergo a mandatory safety training before beginning any clinical work at the CLC (in addition to clinic orientation and mandatory privacy/record management training); the back door of the clinic now remains locked at all times and all students and staff are required to enter
the facility from the main front door (where clients enter); and the viewing room door now remains locked during all times when clients are in the CLC.

Additionally, in the last two years, several safety features were added to the CLC to include: New and brighter lighting in the central hallways; an upgraded alarm for the building; two panic buttons for student and staff use; additional mobile panic buttons (that can be taken into session rooms with student counselors if desired); an internal phone system (with two-way phones in each counseling room connected each room to the viewing/supervision room); a camera in the waiting room so that faculty and campus security can view this area if needed; and an identification card lock has been added to the viewing room door, requiring students and staff must slide their identification cards to enter.

**Clients.** Initially when the CLC opened, the clients served were mostly referrals from the local churches, overflow for county mental health services, and local probation services (basically individuals, couples, and families who had no other options or resources for counseling and mental health services). Now, as the reputation of the CLC has grown, more clients are self-referrals and referrals from private practitioners in the area. Overall, clients seen at the CLC include a wide variety of presenting issues such as: systemic family dysfunction, couple issues, parenting issues, developmental and adjustment issues, biogenic mental health disorders, mental health disorder, mental health disorder with co-morbid substance abuse, spiritual issues, and mandated court referrals. This varied list of presenting issues has provided student counselors with a plethora of training and professional development opportunities.

**Future Directions**

By necessity, the CLC is a flexible and dynamic facility. It continues to evolve as the needs of the counseling program it supports have varied (e.g., changes in the focus of the
degrees), as the faculty has changed, and as client needs have changed. Currently, the CLC is undergoing a slight title revision and is in the process of pursuing institutional permission for a logo that will be separate and distinct from approved institutional logos. Whereas the CLC previously had been named the Community Life Center, the name has recently been changed to the Community Life Counseling Center (to emphasize that the facility provides counseling services). The acronym CLC will be retained as it has recognition in the community among referral agents. A tag line of "Outreach at UMHB" has also been proposed to emphasize that the CLC serves the community and not the UMHB student body.

Summary

As described, the Community Life Counseling Center is a dynamic and flourishing counselor training facility which is constantly evolving to meet the changing training needs of the clientele it serves and the Graduate Counseling Program. The two most constant themes in the successful establishment and management of the CLC could easily be described as strong administrative support and faculty dedication. Without complete support from the University administration, the CLC would never have made it past the planning phase. Administrative support is considerably more complex than mere budget support (although clearly, adequate budgeting is essential). Opening the CLC required long-term vision and considerable administrative commitment to fully understand the potential value that this type of training facility could bring to the counselor education program and how this benefit would outweigh the potential risks (e.g., legal liability and added operational costs). However, administrative support alone cannot guarantee the success of a training facility like the CLC. This type of training facility takes considerable faculty dedication, time, and effort to be successful. Faculty must have a strong interest not only in training students, but in clinical work as well. It takes a
consistent team effort to provide faculty coverage and supervision to operate a fully-functioning mental health clinic manned by student-counselors and to address the challenges that emerge (not only client situations but also questions about student competency). Finally, faculty must seek continuous improvement to ensure the facility and training being offered to students continues to mirror the growth and technological advances in the counseling profession.
References


*Our history* (n.d.) Retrieved from: http://about.umhb.edu/our-history
Appendix

(PowerPoint slides from presentation presented at the HIEC conference, January, 2015)

THE EVOLUTION OF A COUNSELOR TRAINING FACILITY / COMMUNITY-BASED COUNSELING CENTER: LESSONS LEARNED

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UNIVERSITY OF MARY HARDIN-BAYLOR, BELTON, TX

- Small, private, Christian institution affiliated with the Texas Baptist Convention (3,400 students)
- Historical girls school (1845; sister school to Baylor)
- Primarily undergraduate (3,000 undergraduate students)
- Small town (< 20,000)
- 1 hour from Waco; 1 hour from Austin
- 20 minutes from Ft. Hood
LAYING THE GROUNDWORK...

3

- Demonstrating the need (in the community & to support the counseling training program)
- Getting the support of the administration & Board of Trustees (more than just financial support)
- Preparing the paperwork & processes (minimizing risk to the institution)
- Advertising and getting clients (initially & on-going)

COMMUNITY LIFE COUNSELING CENTER
Grand Opening
August, 2005
THEN & NOW:

Early 1900s

COMMUNITY LIFE COUNSELING CENTER (TODAY)

- Open 9 ½ years
- 11,000+ client sessions
2005:
- No dedicated director
- No course reduction for faculty
- No office worker support
- VHS tapes
- Furnished by donations

2006:
- Addition of the director's office (wall separating the viewing room)
- Initial upgrade to cameras & viewing equipment (still VHS)
2006: Waiting area

2006: Receptionist area
2006:
Group room /
Large
counseling
room

2006:
Back hall area
2006:
Play therapy room

2006:
Viewing area
- Analog equipment
- 4 viewing stations
- VHS; then DVDs
- (4 counseling rooms)
**Changes in 2013:**

- Full-time director (took more than one year due to budget cycle)
- Digital upgrade of equipment and wiring
- Digitizing records: Titanium & NICE
- Additional counseling rooms (6 total + group room); and additional viewing stations
- All new furniture
- Multiple session viewing in director’s office
- 5 student computer work stations
- New/smaller receptionist area
- Better sound-proofing (on-going effort)
- Additional student workers (to assist with scheduling, answering phones, etc.)
- Once-a-year schedule (practicum in the spring; internship in fall-spring sequence)
- Recognition of CLC Student-of-the-month
2013: COUNSELING ROOM 2
(Other half of old play therapy room)

2013: COUNSELING ROOMS 3 & 4
(Mirror image rooms – each with 3 seats)
2013: COUNSELING ROOM 5
Sandtray counseling (teens & adults only)

2013: BACK HALL / GROUP ROOM
- DVD viewing area for psycho-educational work
- Camera and microphone equipped for group sessions
- Chairs can be moved to other areas as needed
**2013: VIEWING ROOM**

- 6 viewing stations (on computers)
- Desk for GA or supervisor (with phone and computer)

**2013: DIRECTOR’S OFFICE**

- Ability to see all sessions at once or listen to any one room:
- Room for supervision
2014: TECHNOLOGY

- Better AC (to counteract heat from all the electronic equipment);
- Phones for added supervision;
- A second large viewing TV.

THE FUTURE?

- Better play therapy space?
- Continuing adaptations for safety and technology
One of the many challenges that confront pre-service teacher educators is the resistance to change that many teaching candidates bring to their preparatory experiences in colleges of education. For as many as 16-21 years prior to commencing their formal preparation for the classroom, pre-service teachers watch what their teachers do in the classroom, a compendium of experience known as the apprenticeship of observation (Lortie, 1975). As a result of this apprenticeship, pre-service teachers develop very firm ideas and convictions about teachers and teaching, attitudes and beliefs that are very difficult to alter or amend, even when conflicting evidence is presented (Borg, 2004; Brouwer & Korthagen, 2005; Holt-Reynolds, 1992; Kagan, 1992a, 1992b; Nissani & Hoefler-Nissani, 1992; V. Richardson, 1990, 2003). Furthermore, there is a well-documented discrepancy between research-based practices and the instructional methods that comprise the varying experiences that pre-service teachers have as students (Borg, 2004; Holt-Reynolds, 1992; Kagan, 1992; Kennedy, 1998; Richardson, 1990, 2003).

In this presentation I review a qualitative study I conducted of six pre-service teachers who were each paired with a high school writing partner to see if a correspondence obtained between the pre-service teachers' stated attitudes and beliefs about writing, writing instruction, and responding to student writing and the response strategies they employed as part of a field experience component of an introductory course in secondary writing instruction. Additional targets of inquiry included the pre-service teachers' negotiations of their concurrent positions as students and teachers towards the development of their professional identities as well as the
perceptions of the high school students of the pre-service teachers’ methods of responding. Social Positioning Theory was utilized as an interpretive lens for discovering how pre-service teachers and their high school counterparts were negotiating rights and responsibilities during the revision process.

Three data sources were utilized in this study: (1) a 50-item Likert-style survey/questionnaire with seven open-ended questions, administered pre- and post- semester, (2) copies of essays or creative research pieces (two drafts per participant) written by the high school students and marked and commented upon by the pre-service teachers, and (3) audiotaped interviews of all pre-service teacher and high school student participants, conducted after the field experiences. Methods of analyses included coding the Likert-Style surveys for patterns in dispositions towards writing and instruction, using HyperResearch software to organize and code the interview transcripts, and classifying/interpreting the pre-service teachers’ written commentary utilizing two reflective models that represent “teacher/student responsibility for revision” and “degrees of control.”

Although there was a correspondence between the stated attitudes and beliefs and response styles in four of the six cases, it was discovered that the pre-service teachers’ backgrounds as student writers were more reliable as indicators of their initial response strategies, obtaining a correspondence in all six cases. In two cases, pre-service teachers working with reluctant writers altered their response strategies from their stated attitudes and beliefs between the first and second drafts (and first and second writing conferences). These changes in strategy and methods indicate that instructional circumstances can supersede attitudes and beliefs as markers for instructional practice where novice teachers interpret classroom contexts as being limiting or otherwise uncertain. In only two of the six cases does a correspondence obtain between the pre-service teachers’ written commentary on the high school students’ assignments and their willingness to position themselves as “teacher” during the writing conferences, indicating that written response is only one of several factors in determining how pre-service teachers’ are negotiating their developing identities in the classroom.

Implications for writing instruction and teacher education are discussed.

Biographical Information

JT Cox has taught English language arts in secondary schools in Arizona and Florida. He completed his Ph.D. in English Education at Florida State University. His research interests include issues in writing instruction, especially the attitudes and beliefs of writers and writing teachers, response theory and practice, and pre-service teacher development. He currently teaches courses in education in Valdosta, Georgia. Contact: jtcox@valdosta.edu

References


The Adventures of ADDIE—The Unsinkable Model of How We Get Things Done

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Abstract
The pervasive ADDIE model of instructional design guides much of what professionals do in a remarkably wide venue. Working in often insular silos of work, we may be startled to find that fields as different as instructional design and nursing independently found their way to a core model of “getting things done.” This paper reviews the evolution of this core model across disciplines to present remarkable similarities. This comparison reinforces the eminently sensible way that intelligent humans accomplish worthy work, and reveals tools and techniques developed in some fields that may transfer to others far away.

Introduction
Trainers, teachers, information designers, and instructional designers are aware of the the eminent ADDIE model of instructional design, the source of most of the 100+ models of instructional design (Gustafson & Branch, 2002):

- **Analyze**—learner characteristics, task to be learned
- **Design**—develop learning objectives, choose instructional approach
- **Develop**—create instructional materials
- **Implement**—deliver instruction
- **Evaluate**—assess efficacy

Ships steaming parallel courses through the night, the venerable ADDIE model of instructional design reveals surprising similarity to disciplines and fields outside its presumed borders. These include the large fields of human performance technology (HPT), project management (PM), and even instructional design (ID). Side-by-side comparison of the major models of practice in these disparate fields shows overlap often congruence. Presumably developed independently, with little modification these foundational models can be substituted one for another.

Getting Stuff Done
Beyond a philosophical curiosity, this epiphany (for the author) suggests a new line of academic inquiry that may return surprising and undiscovered pearls and “lessoned learned.” This is because many competent people have spent a good bit of time and energy trying to tease out how to get stuff done.
And in many cases there is transferability that asks to be explored across disciplines. Nurses want to achieve optimal patient outcomes, project managers want to build things on time and according to specifications, instructional designers want to develop effective courses and tools—and although the goals, training, background, work environment and clothing varies—the several professional models and methods are strikingly similar. The intent is to establish a framework of commonality and seek tools, techniques, and hard won lessons learned that might transfer across disciplines.

The Usual Suspects

Project Management

Project Management (PM) is the application of knowledge, skills and techniques to execute projects effectively and efficiently. It’s a strategic competency for organizations, enabling them to tie project results to business goals — and thus, better compete in their markets. (Project Management Institute)

PM is a well-established discipline with a dynamic professional organization (PMI.org) and a rigorous and formidable body of knowledge. PM is also a professional practice focus in many professions such as the various engineering fields, construction, and computer software development. The Project Management Institute provides various levels of professional credentialing and publishes a widely acknowledged, authoritative repository of PM expertise, the Project Management Body of Knowledge (PMBOK). Of several models of PM, the PMBOK model is best known and defines the following PM processes (“IEEE Guide Adoption of PMI Standard a Guide to the Project Management Body of Knowledge,” 2004):

1. Initiating—The project’s scope is established and the project team assembled.
2. Planning—Project requirements are acquired, detailed plans are made, and a schedule is established.
3. Executing—Project requirements are further developed iteratively and the project is continuously monitored and managed.
4. Controlling—Resources and project team member assignments are adjusted to keep the project on schedule with optimal efficiency.
5. Closing—The project gets final quality assessment, the project team reviews the endeavor and records lessons learned, and the project is brought to closure administratively and by conveying project deliverables.

PM is a field that reveals a near mysterious aspect in successful human endeavors—that the tools and techniques of PM, and the invaluable lessons learned, are transferable to seemingly unrelated projects. Successful and unsuccessful projects from software design to skyscraper construction to producing the international Olympics show remarkable similarity. Project managers share a highly codified toolset of processes with their underlying challenges, solutions, and terms. A project must be completed by a deadline, within budget, and according to specifications (Wysocki, Jr, & Crane, 1995). PM is described as
a “cascading” process, where one phase or process must be complete or well along before the next may begin.

**Human Performance Technology**

**Human Performance Technology (HPT)**

Human Performance Technology (HPT) is a systematic approach to improving productivity and competence, uses a set of methods and procedures — and a strategy for solving problems — for realizing opportunities related to the performance of people. More specific, it is a process of selection, analysis, design, development, implementation, and evaluation of programs to most cost-effectively influence human behavior and accomplishment. It is a systematic combination of three fundamental processes: performance analysis, cause analysis, and intervention selection, and can be applied to individuals, small groups, and large organizations. (International Society for Performance Improvement)

HPT in adult world of adult learning—corporate, government and military— is considered the parent field of instructional technology and likely also instructional design. The HPT model of practice shows more than a passing resemblance to the others presented here (see comparison table below).

**Technical Communication**

**Technical Communication**

Technical Communication (TCOM) is the process of conveying usable information about a specific domain to an intended audience. (Society for Technical Communication)

Instructional Design and Technical Communication are remarkably similar, manifestly compatible sister fields, although they often seem to be curiously unaware of one another. Developing as independent disciplines, the similarities in theory, tools and techniques in ID and in TCOM projects are striking. Consider the seminal model of instructional design, ADDIE (Gagne, Wager, Golas, & Keller, 2004), the basis for most instructional design models, compared to the Hackos model (Hackos, 1994) for managing documentation projects:

Note that the ID and TCOM project models are made identical by reversing the positions of Hackos model steps three (implementation) and four (production). Perhaps best known of the ADDIE model derivatives is the ID model of Dick and Carey (Dick, Carey, & Carey, 2008) ADDIE ID models appear linear but are in fact iterative and recursive, not stepwise (Gagne et al., 2004, p. 3). TCOM projects are often similarly cyclical, as is the Nursing process in clinical practice.
Table 1—ADDIE and Process Models of Three Sister Fields

The Folk Who REALLY Get Things Done—The Nursing Process

The common thread uniting different types of nurses who work in varied areas is the nursing process—the essential core of practice for the registered nurse to deliver holistic, patient-focused care.

Assessment
An RN uses a systematic, dynamic way to collect and analyze data about a client, the first step in delivering nursing care. Assessment includes not only physiological data, but also psychological, sociocultural, spiritual, economic, and life-style factors as well. For example, a nurse’s assessment of a hospitalized patient in pain includes not only the physical causes and manifestations of pain, but the patient’s response—an inability to get out of bed, refusal to eat, withdrawal from family members, anger directed at hospital staff, fear, or request for more pain medication.
**Diagnosis**
The nursing diagnosis is the nurse’s clinical judgment about the client’s response to actual or potential health conditions or needs. The diagnosis reflects not only that the patient is in pain, but that the pain has caused other problems such as anxiety, poor nutrition, and conflict within the family, or has the potential to cause complications—for example, respiratory infection is a potential hazard to an immobilized patient. The diagnosis is the basis for the nurse’s care plan.

**Outcomes/Planning**
Based on the assessment and diagnosis, the nurse sets measurable and achievable short- and long-range goals for this patient that might include moving from bed to chair at least three times per day; maintaining adequate nutrition by eating smaller, more frequent meals; resolving conflict through counseling, or managing pain through adequate medication. Assessment data, diagnosis, and goals are written in the patient’s care plan so that nurses as well as other health professionals caring for the patient have access to it.

**Implementation**
Nursing care is implemented according to the care plan, so continuity of care for the patient during hospitalization and in preparation for discharge needs to be assured. Care is documented in the patient’s record.

### ADDIE model of instructional design vs The Nursing Process

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**Table 2—ADDIE and the Nursing Process**

**Conclusion**
Declarations of the death or impending demise of the ADDIE model appear often in the literature. ADDIE is not moribund but is in fact the enduring framework for much of the world’s professional work. The technology tools of instructional development have evolved at a dizzying rate but this tends to permit technicians to generate dazzling content presentations devoid of basic tenets of expert instructional design. Consider that front-end analysis—attending to the characteristics of the learners and the exact goal of instruction—must continue to guide instructional development using any tool. The old lions of instructional design have long said that attending to basic elements of expert instructional design helps. They are correct. Even exciting new processes such as Agile instructional design (AKA rapid prototyping?) and SAM (successive approximation model) rely on the planks in the ADDIE model.
References


doi:10.1109/IEEESTD.2004.94565

The Adventures of ADDIE—The Unsinkable Model of How We Get Things Done

Keith B. Hopper, PhD
Southern Polytechnic State University

Abstract

The pervasive ADDIE model of instructional design guides much of what professionals do in a remarkably wide venue. Working in often insular silos of work, we may be startled to find that fields as different as instructional design and nursing independently found their way to a core model of “getting things done.” This paper reviews the evolution of this core model across disciplines to present remarkable similarities. This comparison reinforces the eminently sensible way that intelligent humans accomplish worthy work, and reveals tools and techniques developed in some fields that may transfer to others far away.

Introduction

Trainers, teachers, information designers, and instructional designers are aware of the the eminent ADDIE model of instructional design, the source of most of the 100+ models of instructional design (Gustafson & Branch, 2002):

- **Analyze**—learner characteristics, task to be learned
- **Design**—develop learning objectives, choose instructional approach
- **Develop**—create instructional materials
- **Implement**—deliver instruction
- **Evaluate**—assess efficacy

Ships steaming parallel courses through the night, the venerable ADDIE model of instructional design reveals surprising similarity to disciplines and fields outside its presumed borders. These include the large fields of human performance technology (HPT), project management (PM), and even instructional design (ID). Side-by-side comparison of the major models of practice in these disparate fields shows overlap often congruence. Presumably developed independently, with little modification these foundational models can be substituted one for another.

Getting Stuff Done

Beyond a philosophical curiosity, this epiphany (for the author) suggests a new line of academic inquiry that may return surprising and undiscovered pearls and “lessoned learned.” This is because many competent people have spent a good bit of time and energy trying to tease out how to *get stuff done*. 
And in many cases there is transferability that asks to be explored across disciplines. Nurses want to achieve optimal patient outcomes, project managers want to build things on time and according to specifications, instructional designers want to develop effective courses and tools—and although the goals, training, background, work environment and clothing varies—the several professional models and methods are strikingly similar. The intent is to establish a framework of commonality and seek tools, techniques, and hard won lessons learned that might transfer across disciplines.

**The Usual Suspects**

**Project Management**

*Project Management*

Project Management (PM) is the application of knowledge, skills and techniques to execute projects effectively and efficiently. It’s a strategic competency for organizations, enabling them to tie project results to business goals — and thus, better compete in their markets. (Project Management Institute)

PM is a well-established discipline with a dynamic professional organization (PMI.org) and a rigorous and formidable body of knowledge. PM is also a professional practice focus in many professions such as the various engineering fields, construction, and computer software development. The Project Management Institute provides various levels of professional credentialing and publishes a widely acknowledged, authoritative repository of PM expertise, the Project Management Body of Knowledge (PMBOK). Of several models of PM, the PMBOK model is best known and defines the following PM processes (“IEEE Guide Adoption of PMI Standard a Guide to the Project Management Body of Knowledge,” 2004):

1. **Initiating**—The project’s scope is established and the project team assembled.
2. **Planning**—Project requirements are acquired, detailed plans are made, and a schedule is established.
3. **Executing**—Project requirements are further developed iteratively and the project is continuously monitored and managed.
4. **Controlling**—Resources and project team member assignments are adjusted to keep the project on schedule with optimal efficiency.
5. **Closing**—The project gets final quality assessment, the project team reviews the endeavor and records lessons learned, and the project is brought to closure administratively and by conveying project deliverables.

PM is a field that reveals a near mysterious aspect in successful human endeavors—that the tools and techniques of PM, and the invaluable lessons learned, are transferable to seemingly unrelated projects. Successful and unsuccessful projects from software design to skyscraper construction to producing the international Olympics show remarkable similarity. Project managers share a highly codified toolset of processes with their underlying challenges, solutions, and terms. A project must be completed by a deadline, within budget, and according to specifications (Wysocki, Jr, & Crane, 1995). PM is described as
a “cascading” process, where one phase or process must be complete or well along before the next may begin.

**Human Performance Technology**

*Human Performance Technology (HPT)*

Human Performance Technology (HPT) is a systematic approach to improving productivity and competence, uses a set of methods and procedures — and a strategy for solving problems—for realizing opportunities related to the performance of people. More specific, it is a process of selection, analysis, design, development, implementation, and evaluation of programs to most cost-effectively influence human behavior and accomplishment. It is a systematic combination of three fundamental processes: performance analysis, cause analysis, and intervention selection, and can be applied to individuals, small groups, and large organizations. (International Society for Performance Improvement)

HPT in adult world of adult learning—corporate, government and military—is considered the parent field of instructional technology and likely also instructional design. The HPT model of practice shows more than a passing resemblance to the others presented here (see comparison table below).

**Technical Communication**

*Technical Communication*

Technical Communication (TCOM) is the process of conveying usable information about a specific domain to an intended audience. (Society for Technical Communication)

Instructional Design and Technical Communication are remarkably similar, manifestly compatible sister fields, although they often seem to be curiously unaware of one another. Developing as independent disciplines, the similarities in theory, tools and techniques in ID and in TCOM projects are striking. Consider the seminal model of instructional design, ADDIE (Gagne, Wager, Golas, & Keller, 2004), the basis for most instructional design models, compared to compared with the Hackos model (Hackos, 1994) for managing documentation projects:

Note that the ID and TCOM project models are made identical by reversing the positions of Hackos model steps three (implementation) and four (production). Perhaps best known of the ADDIE model derivatives is the ID model of Dick and Carey (Dick, Carey, & Carey, 2008) ADDIE ID models appear linear but are in fact iterative and recursive, not stepwise (Gagne et al., 2004, p. 3). TCOM projects are often similarly cyclical, as is the Nursing process in clinical practice.
### ADDIE model of instructional design

| Analyze—learner characteristics, task to be learned | Identify Gap | Initiating | Information Planning |
| Design—develop learning objectives, choose instructional approach | Cause Analysis | Planning | Content Specification |
| Develop—create instructional materials | Design Intervention | Executing | Implementation |
| Implement—deliver instruction | Implement Intervention(s) | Monitoring and Controlling | Production |
| Evaluate—assess efficacy | Evaluate | Closing | Evaluation |

**Table 1—ADDIE and Process Models of Three Sister Fields**

## The Folk Who REALLY Get Things Done—The Nursing Process

The common thread uniting different types of nurses who work in varied areas is the nursing process—the essential core of practice for the registered nurse to deliver holistic, patient-focused care.

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An RN uses a systematic, dynamic way to collect and analyze data about a client, the first step in delivering nursing care. Assessment includes not only physiological data, but also psychological, sociocultural, spiritual, economic, and life-style factors as well. For example, a nurse’s assessment of a hospitalized patient in pain includes not only the physical causes and manifestations of pain, but the patient’s response—an inability to get out of bed, refusal to eat, withdrawal from family members, anger directed at hospital staff, fear, or request for more pain mediation.
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The Impact of Digital Technology Use in High School Critical Incidents: Why schools need to update their current policies.

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Submission ID: 62

ABSTRACT OF PAPER:

The way in which a high school student uses digital technology during a critical incident on campus is a growing area of research. A critical incident could include, sudden death of student or staff member, natural disaster, school shooting, threat of terrorism or outbreak of disease. In reviewing current literature, it is evident that many issues arise from the use of technology during a crisis.

Key themes that emerge within the current research include the rapid transmission of information and the inability of schools to restrict communication to media outlets during and after an incident. Invariably this may amplify the risk of inappropriate or inaccurate information being communicated to the school community and the wider public. Social media usage by members of the school community can also contribute to ambiguity in information and subsequent recovery if not managed effectively.

Additionally, the rapidity of information dissemination potentially restricts the schools ability to manage the high level emotion and reactive behaviours that can surround critical incidents. Specific
training, clear roles of staff and clarity in the function that digital technology plays in emergency management are essential aspects for schools to embrace in policy development.

In reviewing the current trends in research of this topic a list of recommendations is presented. It is clear that ongoing research and reflection into this issue is required to ensure critical incidents are managed effectively in our schools.
Title:
More than just Read Alouds: How to get the most out of mentor texts

Author:
Amy Griswold
Department of Teaching
University of Northern Iowa
UNI SEC 509 0613
Cedar Falls, IA 50614
amy.griswold@uni.edu

Abstract:

More than just read alouds: How to get the most out of mentor texts is a presentation that focuses on how to use mentor texts to teach essential literacy skills while addressing core standards. Quality mentor texts will be shared as well as lesson plans and activities for each text. Connections will be made to content areas, with the inclusion of both fiction and non-fiction texts. Multiple examples will be provided for implementation in a variety of grade levels. New and favorite book titles will be included in this presentation.

In addition to sharing tools and strategies in the use of mentor texts, participants will have the opportunity to discuss current research, trends, and challenges faced when using mentor texts. During this session, educators will also be asked to collaborate with others as they share ideas regarding the current use of texts in their teaching and classroom.
GirlPower & GoodGuys: The Language of Friendship for Tweens

Topic Area: Counselor Education, Elementary Education, Health Education
Presentation Format: Workshop

Designed for professionals working with students from grades 1 to 6, the fundamental principles of GirlPower & GoodGuys are explored along with the behind-the-scenes rationale for our approach. Through a dynamic, upbeat presentation, educators will learn a new “language” to share with students so they can co-identify Friendship Fires™ and learn to better communicate solutions. We will also highlight the fascinating similarities and differences between boys & girls and their experiences in friendship.

Author: Dana Kerford
Teacher & Friendship Expert
Founder of GirlPower & GoodGuys
1640 Westmount Rd NW, Calgary, AB
Canada T2N 3M1
(403) 802-4107
girlpower@urstrong.com
<table>
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<tr>
<td><strong>Name and bio</strong></td>
<td>Dana Kerford is a Teacher, Friendship Expert, Author, and the Founder of the internationally recognized friendship programs, GirlPower &amp; GoodGuys. With extensive research on relational aggression and conflict-resolution, Dana developed GirlPower’s skills-based curriculum. She has worked with close to thirty thousand tweens, parents, and educators across North America and Australia and has been featured in magazines, newspapers, and been a guest on numerous television programs. After piloting GoodGuys in 11 schools across 3 countries, GirlPower’s brother program launched in June 2014. Dana’s passion to empower tweens with the skills, language, and self-confidence to be better friends and develop healthier friendships is the heart and soul of GirlPower &amp; GoodGuys.</td>
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<td><strong>Description of presentation:</strong></td>
<td>GirlPower has improved the social climate in hundreds of schools globally, teaching girls a common language for confidently managing conflict and creating a culture rooted in respect and kindness. After years of being asked, “What about the boys?” and extensive research on the dynamic of boys’ friendships, GoodGuys launched in June 2014. These unique programs empower children with the skills, language, and self-confidence to be better friends and develop healthier friendships. A key element of the curriculum is teaching students the difference between normal conflict and bullying. GirlPower &amp; GoodGuys’ focus on teaching the skills to develop healthy relationships, starting at a young age, is the preventative approach and, ultimately, the solution to the bullying epidemic. Designed for professionals working with students from grades 1 to 6, the fundamental principles of GirlPower &amp; GoodGuys are explored along with the behind-the-scenes rationale for our approach. Through a dynamic, upbeat presentation, educators will learn a new “language” to share with students so they can co-identify Friendship Fires™ and learn to better communicate solutions. We will also highlight the fascinating similarities and differences between boys &amp; girls and their experiences in friendship.</td>
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## Learning Objective(s):

Educators will learn strategies to use in the classroom, along with information to share with parents for supporting their child at home. Key elements of our curriculum that will be covered include:

- What’s normal in a friendship via the 4 Friendship Facts
- How to identify healthy versus unhealthy friendships via the Friend-o-meter
- The normal cycle of a healthy friendship via the Friend-o-cycle
- Strategies for putting out Friendship Fires™
- Identifying the difference between normal conflict and mean-on-purpose behavior (e.g. bullying)
- How to use a “Quick Comebacks” to combat mean-on-purpose behavior

## Summary of Program:

GirlPower™ & GoodGuys™ empower students with the skills, language, and self-confidence to be better friends and develop healthier friendships.

Our team of “Friendship Experts” offer a full suite of in-school workshops for girls, boys, parents, and educators. We also have an in-school curriculum for both GirlPower & GoodGuys, Friendology 101, that’s been adopted by over 80 schools around the world.

To learn more about our programs & resources available for tweens, parents, and educators please visit: [www.urstrong.com](http://www.urstrong.com)

## Equipment/Supplies Requested:

Projector, Screen, Speakers
Distance Education Teaching and Learning

Carol A. Hall

University of Phoenix School of Advanced Studies
Abstract

Institutions of higher education are adding online programs in which students and faculty are virtually present, and different forms of technology are the conduit used to transfer and acquire knowledge. This learning dimension is cause for thought as to how higher education institutions are going to maximize the online teaching and learning potential to satisfy faculty and students. More research needs to be undertaken to determine online teaching and learning “best practices.”
Distance Education Teaching and Learning

A new higher education classroom environment for many faculty and students has emerged. A student does not need to sit in a traditional classroom or theater with hundreds of other students, listen to an instructor’s lecture, answer questions, and leave only to return later in the week to do the same thing or, perhaps, return to take an exam. Learning at many higher education institutions no longer only takes place in traditional, brick-and-mortar classrooms or theaters containing a physically present teacher. Modes of delivery of higher education are blurring. Students can now attend multiple educational institutions using various delivery modes.

More and more institutions of higher education are adding online classes and degree programs in which students and faculty are virtually present, and different forms of technology are the conduit used to transfer and acquire knowledge. Various types of online learning for use include asynchronous communication tools such as newsgroups, e-mail, and threaded discussions that allow participants to contribute to class discussions at their convenience. Other models include synchronous means comprised of chat rooms, video and audio technologies, and webcasting. Some models incorporate both asynchronous and synchronous technology.

According to the National Center for Education Statistics 2006-07, 61% of two- and four-year colleges offer online, hybrid/blended online, or similar distance education courses (U.S. Department of Education, 2008, p. 6), and the number is increasing. From 2007 to 2008, 20% of undergraduate students took at least one course online, and 4% of undergraduate students took all courses online (U.S. Department of Education, 2011, p. 5). In fall 2012, 14.2% of undergraduate students took at least one course online, and 11.1% of undergraduate students took all classes online, and almost 5.5 million post secondary students enrolled in distance
education courses (NCES 2014, p. 4). As of 2012, some states have mandated high school
students take a minimum of one virtual class to earn their high school diploma. This learning
dimension is cause for thought as to how higher education institutions are going to maximize the
online teaching and learning potential to satisfy faculty and students.

The pedagogy of online learning versus face-to-face learning is and continues to be a
concern for many educators, particularly in view of student academic preparedness, maturity
level, and study skill acquisition. Online faculty members are challenged to redefine their roles
and assumptions of teaching and learning (Wiesenberg & Stacey, 2008). Kreber and Kanuka
(2006) stressed the need to facilitate online learning so students reach their potential as
imperative. Even though students are responsible for their own learning and success, instructors
must act as facilitators and guides (Berge, 2009, Salmon, 2004; Smith, 2005) in providing
students with the support, resources, and tools they need to be successful.

Instructor well-planned syllabi and well-explained class policies enumerating clear
expectations to fulfill course competencies are essential for distance education students, as well
as the need for instructors to provide students with timely, detailed feedback on assignments.
The online teacher must be cognizant of and follow the institution's policies, which policies may
not allow for such occurrences such as late assignments, make-up work, or personal
emergencies. The online student's responsibility is to read and follow syllabi and policies, to
fulfill assignment and class expectations, and to seek information by questioning when clarity is
sought. Students are encouraged to read instructions carefully, highlight relevant information
and due dates, examine assignment criteria and rubrics, and employ mechanics of writing and
formatting rules.
Successful institutions and systems that undertake instituting classes in virtual environments encourage and support teamwork (Berge, 2009). Instructors can foster a sense of community by having students work in a group or team to collaborate and complete a learning project during each course. Team projects allow students the opportunity to take turns leading and following. Instructors in virtual classrooms can promote, encourage, and enhance team learning and community building.

All students, whether attending traditional or online classes, deserve a quality education that allows them to reach their potential and prepares them to be productive citizens in their workplace and the world. The North American Council for Online Learning [NACOL] (2010) established national standards for online teaching for K-12 educators. Council standards include teacher knowledge of concepts and structures needed to be an effective online teacher who fosters success in students; teacher knowledge of and ability to use technologies to sustain and promote student learning and engagement in the online environment; teacher ability to incorporate activities for students to demonstrate learning by applying, participating, collaborating, and interacting substantively online; teacher competence in enhancing student success using clear expectations while giving prompt, detailed feedback; teacher modeling of ethical online behavior; teacher ability to meet the needs of all students, to assess student learning accurately, and to design assessments that meet course learning goals and objectives and fulfill course competencies; and teacher proficiency in using data driven assessments to adapt course content to foster student learning (NACOL, 2010). While these standards are in place for K-12 environments, they also appear applicable for colleges and universities.

The International Association for K-12 Online Learning [iNACOL] (2011) endorsed a first-rate education for all students along with opportunities to prepare students to be successful.
iNACOL (2011) established “guidelines for course content, instructional design, technology, student assessment, and course management” (“Introduction”). The association also supported new teaching and learning models to include “blended learning, personalized instruction, portable and mobile learning” (iNACOL, 2011, “Understanding online courses”).

According to the Council for Higher Education Accreditation [CHEA] (2002), 17 institutional accreditors recognized 1,979 institutions as providing distance education to students. Higher education accrediting agencies reviewed alternative instructional designs, alternative providers, and the expanded focus on training. The agencies gathered information on “institutional mission, organization, resources of the institution, curriculum and instruction, faculty support, student support, and student learning outcomes” (CHEA, 2002, p. 3). In the 2000–2001 academic year, an estimated 3,077,000 students enrolled in distance education courses.

Community, technical, and traditional colleges along with many universities use "Quality Matters Standards." These standards were established by MarylandOnline (Martin, 2012). Quality Matters Standards focus on course design while incorporating peer-to-peer feedback to establish best practices for the course overview and introduction, learning objectives, assessment and measurement, instructional materials, learner interaction and engagement, course technology, learner support, and accessibility (OIPQMP, 2011, slide 13).

"Best practices" teachers use to foster student learning in the online environment are evolving. Best practices include humanistic aspects of learning such as addressing students by first name and integrating current happenings into weekly discussions. Being present; responding promptly when asked a question; publishing and using rubrics for assignments; giving detailed, encouraging feedback on assignments and returning assignments promptly; and
interspersing humor into the virtual environment are necessary and appropriate. Additional important practices to include in the online environment are incorporating media into learning, making learning relevant by sharing experiences and connecting learning to student career goals, fostering critical thinking and inquiry, and gathering feedback from students and applying it to improve teaching and learning practices.

To be successful instructors in a distance education environment, instructors must adapt some of their ways of teaching to facilitate student learning. Instructors who wish to teach students online must familiarize themselves with best practices needed to maximize student success and work to acquire those skills. Lastly, more research and study needs to be conducted to obtain the knowledge needed to prepare distance education faculty to fulfill the needs of online students and to assist online students in reaching their potential (Baran, Correia, & Thompson, 2011).
References


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).
Bibliography


Website
Take a Stand. Lend a Hand. Stop Bullying Now www.stopbullyingnow.hrsa.gov
Title: Regional Mathematics Centers: Equitable Support for Rural and Remote Schools

Topic Area: Mathematics Education

Presentation Format: Paper Session

Description: This session will focus on the work of the Idaho Regional Mathematics Centers to support teachers by providing free professional development, training, and support in creating effective instructional settings across the state. This qualitative study investigates teachers’ understandings of the Standards of Mathematical Practice and Findings indicate that teachers cite changing roles, the need for greater time, and the use of effective questioning as necessary in implementing the new standards.

Paper Authors:
Dr. Cory A. Bennett, Department of Teaching and Educational Studies, Idaho State University, benncor3@isu.edu

Dr. Julie Amador, Department of Curriculum and Instruction, University of Idaho, jamador@uidaho.edu
Abstract
The Common Core State Standards for Mathematics (CCSSM) has highlighted the need for professional development as teachers implement new content standards and Standards for Mathematical Practice. Supporting teachers in rural Idaho is restrained by a substantial geospatial landscape, lack of professionals in remote regions, and lack of technological infrastructure to support distance delivery. Idaho has developed the Idaho Regional Mathematics Centers to support teachers in implementing the CCSSM. This qualitative study investigates teachers’ understandings of the Standards for Mathematical Practice in order to provide more focused follow-up support for teachers in rural Idaho. Findings indicate that teachers cite changing roles, the need for greater time, and the use of effective questioning as necessary in implementing the new standards.

One of the more recent initiatives for improving student performance in mathematics came from the development and implementation of the Common Core State Standards for Mathematics (CCSSM) (Common Core State Standards Initiative, 2010). These standards, both content and practices, seek to increase students’ mathematical performance and understanding through the development of substantive conceptual understanding. For a few decades there has been considerable attention on high-stakes testing to raise test scores and measure student learning (Phelps, 2000; Wilson, 2007). In doing so, an over-emphasis has been placed on developing students’ computational skills and not on reasoning and thinking skills; skills applicable beyond just mathematics.

In addition, the CCSSM include the Standards of Mathematical Practices, the behaviors and habits of mind used by proficient and creative mathematical thinkers. These practices draw from decades of research and are grounded in the National Council of Teachers of Mathematics (NCTM) Process Standards (2000). The Standards of Mathematical Practices state that students should: “1. Make sense of problems and perseve in solving them, 2. Reason abstractly and quantitatively, 3. Construct viable arguments and critique the reasoning of others, 4. Model with mathematics, 5. Use appropriate tools strategically, 6. Attend to precision, 7. Look for and make use of structure, and 8. Look for and express regularity in repeated reasoning” (CCSS, 2010, p. 6-7). With the adoption of the CCSSM many teachers are unsure of how these new standards, both content and practices will “look” in their classroom and how they can support students’ in mathematics. In short, teachers need to be better equipped to implement the CCSSM and the Standards of Mathematical Practices.
Rural challenges

Supporting teachers to implement the CCSSM can be a daunting task, especially in rural states such as Idaho. The state of Idaho has an average population density of 19 people per square mile, yet 40 of the 131 school districts have less than one student enrolled per square mile (Idaho State Department of Education, 2012). Accessing additional resources to support student learning is not merely a matter of covering great distances in Idaho. The rugged terrain of Idaho imposes geographical barriers that are not easily overcome and when accompanied with the vast distances between districts a greater geo-spatial barrier becomes evident; barriers which become even more pronounced during the winter months. Distance technologies can assist in overcoming these barriers but not all resources can be easily supported through the use of distance technologies. For example, many of the rural schools do not have the bandwidth capabilities to support high speed internet, or other technological advances needed for distance communication. Idaho has an inadequate infrastructure to support distance learning; it is ranked 45th in the nation in average internet speeds (Communications Workers of America, 2010). This means that even with the best of conditions in Idaho, the infrastructure to support interactive distance learning is lacking. In addition, the high cost of maintenance and the continual cost of upgrading software and hardware are often restrained by small budgets in districts with one or two schools.

Thus, a three-faceted barrier exists in Idaho impeding the access to equitable resources and supports for schools as they work towards understanding and implementing the CCSSM. First, the substantial geo-spatial landscape inhibits quick and timely travel to and from remote and rural districts. Second, these remote and rural districts employ far fewer teaching professionals, thus their internal pool of intellectual capital and resources is greatly restricted. Lastly, the technology infrastructure and costs associated with maintaining and updating distance technologies often surpasses available funds. Again, Idaho’s rural schools are unintentionally restricted in accessing equitable human and instructional resources and supports for their teachers and students. This complicates the implementation of new initiatives, such as the CCSSM. As a result, this research answers the following questions: What supports do teachers in rural Idaho need as they work to implement the Common Core State Standards in Mathematics? What are the instructional implications for implementing the Standards for Mathematical Practice?

Methods

Context

To address this issue, the Idaho Mathematics Steering Committee—a group comprised of university faculty, educators, Idaho State Department of Education personnel, and industry partners—set out to determine how the implementation of a statewide, and regionally based, professional network advances teachers’ professional expertise in mathematics and thus student learning in mathematics. Currently, the IMSC is overseeing the implementation of the Idaho Regional Mathematics Centers (IRMC). The IRMCs are research-based and informed resource centers staffed by experts in mathematics education (i.e. master teachers, curriculum specialists, and university faculty) that are strategically housed within regional colleges of educations at the universities and four-year colleges across Idaho. Their primary objective is to provide direct and timely mathematics support to all teachers, schools, and districts across the state. The IRMC serve as regionally-based support centers that develop and deliver instructional support for all school districts within their region. This support includes such things as in-class feedback for teachers and modeling of lessons, single day or continuous and reoccurring school or district-
wide workshops, Professional Learning Community guidance, continuing education credit courses in mathematics and mathematics education for re-certification, or more in depth and multiday district and state-wide conferences. At present, the implementation of the IRMCs are aimed at understanding how these centers advance teacher knowledge, teachers’ professionalism, and how teachers can be supported as they implement rigorous new standards.

The purpose of this study was to better understand teachers’ perception of the instructional implications associated with the Standards of Mathematical Practices to advance their professional expertise in mathematics. For the larger project focused on IRMCs, an explanatory mixed methods multi-phase research design (Creswell & Plano Clark, 2007) was used, as this allowed the researchers to create a more complete and rich understanding of the research questions (McMillan & Schumacher, 2006). For the purpose of this research brief, only the preliminary findings from one phenomenological qualitative research endeavor within the larger project will be reported. Qualitative research is descriptive in nature and focuses on process, thus deeming it appropriate for analyzing how teachers perceive implementation of the CCSSM (Denzin & Lincoln, 2005).

Data

Data included come from work with rural K-12 teachers at IRMCs across the state. The intent is to use this initial data to refine professional development opportunities at all IRMCs to further understand how to support teachers as they implement the CCSSM. To gather data, each IRMC held an initial professional development conference focused on implementation of the CCSSM. At these sessions, teachers worked together to make meaning of the Standards of Mathematical Practices. In this process, they worked in teams of 3-4 to define the meaning of each Standards of Mathematical Practices and determine related implications for teaching and learning. Collectively, teachers in groups at each site completed a Mathematical Practices Analysis Form for each of the eight Standards of Mathematical Practices. The form asked participants to, 1) explain what the mathematical practice means, and 2) detail the implications for teaching and learning.

To analyze the Mathematical Practices Analysis Form, a phenomenological approach (Guest & MacQueen, 2012) was used. Initially, all data were read in entirety by grade level and open coded for instances describing teachers’ perceptions of implications for practice. Main categories from each grade level were then united into common themes in the data; memos about the specific themes were written to provide further explanation of the meaning of data. To conclude analysis, themes in the data were extrapolated to explain teachers’ perceived implications for teaching and learning the Standards of Mathematical Practices. Understanding how teachers perceive the Mathematical Practices provides insight for knowing how to support these teachers as they implement the standards.

Findings

Data analysis revealed teachers in rural Idaho perceive three main implications for teaching and learning related to implementation of the Standards of Mathematical Practices: Changing Roles, Need for Greater Time, and Using Effective Questioning. The following provides an overview of these perceived implications.

Changing Roles

As the teachers worked to make sense of the Standards of Mathematical Practices, they realized full implementation would result in a change in their role in the classroom and a change
in the role of students. Specifically, teachers came to realize that students would need to take increased ownership for their learning and assume leadership roles. For example, one group wrote, “Let kids be teacher.” In this way, the teachers viewed students as authorities of knowledge and realized that they needed to provide opportunities that permit students to take on these roles. In addition, the teachers also reflected on their own roles in the classroom and realized that they need to function as a facilitator of knowledge as opposed to an all-knowing authority figure. When discussing Standards of Mathematical Practices 4, *Model with Mathematics*, one group of teachers wrote “Relinquish Power!!” The teachers realized that their teaching and learning would be influenced by the need to shift roles and provide opportunities for students to take leadership roles with their learning. In essence, the intellectual authority of the classroom needed to reside with the students.

**Need for Greater Time**

As the teachers worked to understand the implications from the standards, they realized implementation of the CCSSM and Standards of Mathematical Practices would take time and student learning would take time. As they analyzed each standard, the need for time to implement the standards for learning became apparent. For example, one 7th grade group wrote, “One day to work on one problem” and another group wrote, “Being patient!!! Give them time” in reference to helping students learn to reason abstractly and quantitatively. At all three grade levels, teachers realized that implementing the Standards of Mathematical Practices would require changes in how they think about lessons because it would demand that they spend more time and go deeper in concepts that had previously been covered in a shorter amount of time.

**Using Effective Questioning**

Finally, the teachers perceived that they would need to focus on the types of questions they asked students and the types of questions students asked each other. One group commented, “Teachers need to develop effective questions…and teach students how to develop ‘good’ questions.” Likewise, another group commented, “Teachers need to help students learn how to ask good questions (Good questions are based on the mathematics).” As the teachers worked to make meaning from the Standards of Mathematical Practices and considered the implications, they realized that the questions asked within the class, be it from teacher or student, should be of a higher order by design and directly related to strengthening students conceptual understanding.

**Implications**

Understanding the implications teachers perceive for teaching and learning with respect to the implementation of the CCSSM is important for understanding how to support teachers as they implement the standards in rural locations. Clearly, the teachers realized that their way of thinking about mathematics instruction would have to change to support implementation of the standards. The challenge is supporting the teachers to: 1) Change roles, 2) Take more time, and 3) Ask intellectual questions, without district level expertise to support these changes. In districts with one or two schools, the role of the IRMCs is essential for ensuring these teachers have support because it provided a means for personnel to work directly with teachers, thereby increasing their access to additional intellectual capital. To date, the formation of the Idaho Regional Mathematics Network and the IRMCs have provided expertise in all six regions of Idaho and personalized professional development. Mathematics education personnel in these locations are still a distance from many of the schools (approximately 20-180 miles); however, the schools have found value in having regional personnel who support them with implementing the CCSSM. As mentioned previously, the full paper will provide additional details on how the
IRMCs continue to provide support to help teachers from rural school districts overcome the aforementioned challenges.

At present, Idaho has worked to implement the IRMCs and these preliminary findings highlight the need to provide continued professional development for teachers throughout the state of Idaho as they work to understand the pedagogical actions needed to appropriately address the standards. In times of increased testing pressure (Phelps, 2000; Wilson, 2007) and given the geo-spatial and infrastructure limitations in the state, the IRMCs are able to support teachers in specific areas of content and pedagogical knowledge regardless of location.

References
Introduction

As individuals age, many physical changes occur, including eye and retina changes that can affect vision. The macular region of the retina provides good central vision. If the macula begins to deteriorate, age-related macular degeneration (AMD) can result. Studies have shown that inadequate diet can be a risk factor for many chronic diseases, including AMD (World Cancer Research Fund, 1997). The leading cause of blindness (54.4% of cases) among white Americans is AMD (Congdon et al., 2004). Blindness and visual impairment are among the top 10 common causes of disability for Americans, and AMD causes both of these impairments. Legal blindness is expected to increase by 70% by 2020, with the growing proportion of older adults in the United States (Centers of Disease Control and Prevention, 2011).

A healthy diet including plenty of fruits and vegetables is thought to contribute to healthy eyes, especially the macula. Although there are over 600 carotenoids (Kruger, Murphy, DeFreitas, Pfannkuch & Heimbach, 2002), carotenoids lutein and zeaxanthin are uniquely found in high concentration in the macula of the eye. Lutein and zeaxanthin make up the macular pigment, a yellow region in the back of the eye (Nussbaum, Pruett, & Delori, 1981; Snodderly, Brown, Delori & Auran, 1984). Some carotenoids, including beta-carotene, lycopene, lutein, and zeaxanthin, exert antioxidant activity which slows or prevents the damaging effect of free radicals, especially within the eyes (Sies & Stahl, 2003; Seddon et al., 1994). The high antioxidant activity of carotenoids may explain why a higher intake of carotenoids has been associated with a lower risk or slowed
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progression for AMD (Seddon et al., 1994; Snellen, Verbeek, van den Hoogen, Cruysberg & Hoyng, 2002). As the body ages, damage caused by free radicals increases the risk for AMD (Beatty, Koh, Phil, Henson, & Boulton, 2000). The role of dietary intake of lutein and zeaxanthin in the prevention of AMD has been explained elsewhere (Seddon et al., 1994).

Inadequate diet is common among older adults and especially among the elderly (Institute of Medicine, 2000). Studies of the elderly have suggested that individual characteristics, such as race or sex, and health-related factors, such as chronic disease, were associated with nutrient inadequacy and low nutrient intake perhaps because of difficulty in shopping, cooking, and the ability to eat a variety of nutritionally dense foods (Sharkey et al., 2002). In their study of homebound elders, Sharkey et al. (2002), reported inadequate intake of calcium, vitamin D, calories, vitamin E, folate, and magnesium. Although lutein and zeaxanthin were not part of the study, key sources of lutein and zeaxanthin such as spinach also are key sources of folate, vitamin E and magnesium. Primary sources of lutein, and its isomer, zeaxanthin, include green leafy vegetables, egg yolk, corn, and many other fruits and vegetables.

To diagnose AMD, individuals are usually referred to a retina specialist (i.e., ophthalmologists with advanced training). Ophthalmologists currently have no treatment that can halt AMD, and many have turned to prescribed diets as their only recommended treatment to slow the progression of the disease. After smoking, diet is the most modifiable risk factor associated with AMD. Specifically, lutein- and zeaxanthin-rich foods or supplements have been beneficial for prevention or slowed progression of AMD (Seddon et al., 1994; Snellen, Verbeek, van den Hoogen, Cruysberg & Hoyng, 2002;
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Richer, 1999). Dry AMD involves large, soft drusen which cause blind spots in the field of vision (Pratt, 2001). About 15% of those diagnosed with AMD have wet AMD, which is more debilitating than dry AMD (Wang, Foran, Smith & Mitchell, 2003).

As part of an overall program to reach the public in prevention efforts for AMD, a group of dietitians worked with an ophthalmology office to reach individuals with AMD. Based on the health belief model, the goal was to teach nutrition information specific to AMD to encourage and to motivate individuals diagnosed with AMD in one eye to change their nutrition and lifestyle habits to slow progression in the diagnosed eye and prevent the disease in the accompanying eye. A variety of tests were conducted to track progression of AMD in the diagnosed eye, as well as tracking for detection of AMD in the healthy eye.

The goal of this study of four participants was to build on evidence presented in other studies which demonstrate that AMD is responsive to a nutrition intervention (Richer, 1999; Richer et al., 2004). Specifically, a primary objective was to measure effectiveness of an increased dietary intake of lutein and zeaxanthin foods and/or supplements on slowing or stopping the progression of diagnosed AMD in the healthy eye for those diagnosed with AMD in one eye. A second goal was to determine whether increased nutrition “expert” accessibility (i.e., licensed, registered dietitians), affected participant post-intervention food intake patterns (i.e., increased lutein and zeaxanthin intake). Finally, the study was designed to finalize a protocol for an ophthalmology-based nutrition intervention, including determination of which tests are most effective for evaluation of results and how much time should be allotted to complete each test.

Methods
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All protocols followed the tenets of the Declaration of Helsinki and informed consent was obtained from all participants after explanation of the nature and possible consequences of the study. The Institutional Review Board (IRB) of BLINDED FOR REVIEW University approved all protocols.

Recruitment

A laminated pocket card was designed for the sponsoring ophthalmologist who recruited participants from his current practice of individuals diagnosed with AMD. The pocket card listed the following study criteria: wet AMD in only one eye, drusen present in at least one eye, date-of-birth between 1916 and 1941, central vision functioning present, no signs of dementia, and free of glaucoma, diabetes, pulmonary disease or other disease that affects the retina. Each participant completed a series of tests offered by an interdisciplinary team.

Since AMD is a complicated condition involving genetic, cardiovascular, nutritional, and environmental components, multiple methods of assessment were designed for the study. The study assessments or tests included components regarding family history, smoking history, history of other disease and medical procedures, and nutrition and environmental components as well. Participants were assessed by an interdisciplinary team, within an individualized time. All of the study elements are explained in the following five sections, as carried out by each discipline.

Ophthalmology measurements by nursing staff

A registered nurse measured blood pressure, heart rate, body temperature, medical, ocular and drug history. Since a dosage of 10,000 micrograms of lutein per day has been associated with slowed progression of AMD (Richer, 1999; Richer et al., 2004),
Nutrition education in the eye clinic

the study dose was established at two 5,000 microgram capsules per day. The registered nurse distributed the lutein supplement and was responsible for dosage education. Study lutein was pre-packaged in zip-top bags for distribution.

Specific exams completed by trained retina specialty nursing staff included the Humphrey visual field exam, the distance logMAR exam, and the Farnsworth D15 dichotomous color test. The Humphrey test which measures how wide and detailed the field of vision is for the participant, took about 30 minutes. Seated at a computer screen, participants with AMD will not be able to see areas in the field where they have blind spots or areas where they are unable to see (i.e. scotoma).

In the logMAR test, the participant is asked to identify letters projected on a screen across the room. The smaller the letters on the chart, and the further away they are, the smaller will be the angle opposite to the eye by the letters. If the patient is unable to read any of the letters, the chart is moved closer to the patient; and the logMAR score is adjusted accordingly. Similar to a Snellen eye chart, the logMAR is more reliable in predicting degree of visual impairment. This test is very subjective, so tests are repeated three times each. The logMAR testing required 35 minutes to over 1 hour to complete for each participant.

Finally, nursing staff completed the Farnsworth procedure to predict color vision. Most color deficiencies are characterized by a lack of certain photopigments in the retina. Participants were given fifteen colored chips and asked to arrange them in the correct order, left eye first time, then again with the right eye, in order of color hue. Most chips are in the blue/brown range and the test is difficult with any loss of color vision.
Nutrition education in the eye clinic

Individuals with certain color vision deficiencies will tend to make typical arrangement errors. This test took about 20 minutes.

*Ophthalmology measurements by physician*

Data collection included a review of systems (i.e., organ systems, reflex, breathing, general health, etc.), followed by a general physical, and finally a complete ophthalmic examination: brightness acuity testing, external and adnexa exam, ocular motility, slit-lamp exam, intra-ocular pressure in each eye, dilated fundus exam, fluorescein angiography, and a check for lens abnormalities (e.g., cataracts).

Most of the ophthalmologic procedures are typical to a complete eye exam used for diagnostic purposes and will not be described in detail. Procedures that were specific to the study were the fluorescein angiography and the brightness acuity testing. Fluorescein angiography was completed during a prior clinic appointment. The fluorescein angiography involved a blue-dye injection into a vein of each participant, and a subsequent series of digital black and white photographs of each retina. The photographs depict both the count and size of drusen present in each eye. As drusen grow in size, or in counts, scotomas increase, i.e. progression of AMD. Pigment of drusen is also a key indicator of progression of disease. Retinal photography was performed in full digital color, illustrating the current pigment hue of particularly the larger drusen.

Disparities exist between functional vision in brightly lit situations compared to that in standard lighting. The brightness acuity tester simulates high lighting conditions such as a white sand beach or white concrete sidewalk on a sunny day (i.e., 10,000 foot candles); medium which mimics indirect sunlight (i.e., 2,500 foot candles); or low such as fluorescent lighting (i.e., 300 foot candles). Upon completion of the tests, the physician
Nutrition education in the eye clinic discussed participant diagnosis changes (if any) with the patient. The ophthalmology diagnostic procedures, not including the fluorescein angiography, took 20 to 30 minutes. **Ophthalmology measurements by dietitian**

The National Eye Institute (NEI) Visual Functioning Questionnaire (VFQ-25) Version 2000 was designed to assess and determine individual perceived quality of life with vision impairment (National Eye Institute, 2000). The VFQ-25, available in English, Spanish, and other languages, obtained at no charge from the NEI, also can measure the dimensions of self-reported vision-targeted health status that are most important for those with eye diseases. The VFQ-25 is divided into nine subscales: global vision rating, difficulty with near vision activities, difficulty with distance activities, limitations in social functioning due to vision, role limitations due to vision, dependency on others due to vision, mental health symptoms due to vision, driving difficulties, limitations in peripheral vision, color vision, and ocular pain. The VFQ-25 also contains the single quality of life related question:

“In general, would you say your overall health is:.....”

The respondent can answer: Excellent, very good, good, fair or poor. This question has been shown to be a robust indicator of future health and mortality in large population-based studies (Ware, Kosinski & Keller, 1996). The near vision subscale, used particularly for this study, contained three questions with the addition of three questions from the VFQ-25 appendix. The additional questions increase the reliability and theoretically would improve the responsiveness of the tool based on dietary intervention. The composite score of all questions, the overall health question score, and the score of the perceived overall vision question also were studied to judge effectiveness of the
Nutrition education in the eye clinic
dietary interventions. The dietitian checked to see that all 28 questions were answered
and also served as the study coordinator.

*Anthropometric measures*

The dietitian measured the weight and height of each participant, shoes and heavy
outerwear removed, using a Seca 700 balance beam scale (Hanover, MD). Waist
measurements were completed using a parallel-to-the-floor tape measure just above the
hip bone with heavy outerwear and belts removed. The dietitian calculated the participant
BMI and explained all measurement results to study participants as the data was
collected. This component was completed within about five minutes.

*Nutrition measures and interventions*

The VFQ-25 and a food frequency questionnaire (FFQ) were mailed to each study
participant the week before their initial appointment. The dietitian checked for
completeness and accuracy especially looking for unanswered questions on both
questionnaires. The FFQ for the study was the Arizona Food Frequency Questionnaire
(AFFQ), a modification of the Health Habits Questionnaire (Block et al., 1986). It has
been tested for reliability as well as relative validity (Thomson et al., 2003). The semi-
quantitative, scannable 153-item FFQ asks respondents to report how often they usually
consume each particular food item over the prior month, expressed in number of times
per day, week, or month. Vitamin and mineral supplement information is collected and
are included in the analysis. The database includes 91 nutrients and lutein, zeaxanthin and
other phytochemicals.

A nutrition screening for undernutrition was completed using the Mini Nutrition
Assessment [MNA] (Guigoz, Vellas & Garry, 1994). Each participant also received a
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complete nutrition assessment by a licensed, registered, dietitian, individualized diet
instruction, emphasizing food sources of lutein and zeaxanthin, and an analysis of their
anthropometric measurements. All participants received three study designed “BLINDED
FOR REVIEW for Your Eyes” brochures: (1) Spinach, a super food; (2) BLINDED FOR
REVIEW your eyes; and (3) BLINDED FOR REVIEW health. The brochures
summarized much of what was explained in the diet instruction and provided a “take
home” message to encourage diet compliance. Eating for your eyes has been offered to
residents of 36 BLINDED FOR REVIEW counties and 9 states including BLINDED
FOR REVIEW (Blinded for Review, 20XX).

Statistical analysis

The distributions of all variables in the study population were examined and
characterized using descriptive (e.g., frequency, relative standing, and classification) and
summary (e.g., proportions and means) statistics. The AFFQ was tabulated using the
University of Arizona Cancer Center (UACC) technical staff and software to summarize
results. Results are based on the UACC pre-programmed statistical calculations using
summarized and proportioned data collected from each participant. Frequencies were
based on the reported last month intake of small, medium, or large portions for lutein and
zeaxanthin foods and supplement intake combined.

The VFQ-25 was tabulated in Excel following published guidelines (Rand
Corporation, 2000). To calculate an overall composite score, each of the 25 question
responses were scored. Answers are weighted in increments of 20 to 25, and in a range of
0.0 to 100.0. If an individual indicates that they can no longer perform an activity, a zero
is scored; if an individual indicates no problems completing the activity, the score is 100.
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A subscale score was calculated in each of the areas, then an average of those scores revealed the total composite. A high score, up to 100 points, indicated no vision problems. A lower score indicated impaired vision. The composite score was designed to predict overall vision and health related quality of life, including domains such as social and emotional well-being.

Results

Description of participants

Four participants were recruited for the study. Similarities for each participant included being white, retired, and diagnosed with AMD in one eye. None of the participants screened positively for undernutrition; all consumed balanced diets as evidenced by MNA results, and results of the FFQ (detailed below). That was where the homogeneity of the participant group ended. Table 1 describes differences. Measurements were taken and listed for baseline and after 90 days intervention for the 4 study participants.

Table 1. Description of participant characteristics and results (N=4) at baseline and 90 days.

<table>
<thead>
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<th>Participant B</th>
<th>Participant C</th>
<th>Participant D</th>
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Nutrition education in the eye clinic

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<th>worse eye</th>
<th>baseline</th>
<th>90 days</th>
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</tbody>
</table>
Ages for participants ranged from 70 to 82 years, with a mean age of 76 years. Half the group were borderline underweight (BMI less than 24) and half were obese (BMI above 30). Two participants exhibited health risk factors associated with heart disease, having a waist larger than 40 inches for males and larger than 38 inches for females, in addition to the higher BMI range. Another risk factor for heart disease is smoking. Participant A was a self-reported daily smoker.

The visual field test revealed a very large blind spot in one participant. Participant C commented that she completed the color blindness testing using her “side vision.” Comparing baseline and 90 days intervention, visual field improved in half the group, and worsened in the other half. One participant complained that the procedure was “boring” and that she felt drowsy during the test. Of all the procedures carried out in the study, nursing staff reported that the Humphrey visual field test was the most difficult for participants to complete, increasing in difficulty with worsened vision.

The color arrangement test consisted of 15 colored chips. The chips are shuffled and then have to be arranged starting from a fixed reference color. The degree of color blindness was measured by colors missed. Although diagnostic standards were not found for this procedure, the registered nurse on the team noted that 10/15 missed by participant A and C was rarely seen. Participant A mentioned that he is color blind on the VFQ-25 so was aware of the impairment; Participant C did not self-report her measured color blindness. Participant D, who had the largest baseline consumption of lutein, had the best color vision, only missing two colors in the entire exam.
The confounding factors were challenging and were addressed in different ways. First, participant A was taking warfarin and warned by his internal medicine physician that he could consume no green, leafy vegetables because of the risk of excessive intake of vitamin K. After obtaining participant permission, the study dietitian contacted his internal medicine physician and registered nurse with a letter explaining that a moderate amount of foods that contain vitamin K may be used with warfarin. Up to 1.5 cups of spinach can be used per day, as long as it is in a “constant,” that is, consistent, amount each day. During the follow-up measurements at 90 days, this was discussed with participant A, who indeed got permission from his primary physician to eat green, leafy vegetables. Participant A was introduced to kiwi (a lutein-rich food) in the study and reportedly was consuming this food regularly.

Participant A also had experienced a recent surgery and subsequent infection along with weight loss. Micronutrient deficiencies are common following weight loss, especially in older adults. His reported deterioration in vision during the study may have been due to the lack of micronutrients or could be related to his continued smoking.

Participant B also was told by her primary physician to avoid most vegetables because of her diagnosis of diverticulosis. The study dietitian found recent educational materials on the disease, which allow almost all vegetables; in fact, the diverticulosis diet emphasizes high-fiber foods. Those materials were mailed to the participant’s physician, upon receiving participant permission. After receiving permission, the study dietitian emphasized use of vegetables daily to control the diverticulosis and also explained the differences between diverticulosis and diverticulitis, where the participant may have had
confusion (one diagnosis calls for a high-fiber diet, the other, a low-fiber diet, respectively).

Participant C had suffered a heart attack in the last five years, but was in a cardiac rehabilitation program that included dietitians on the team. She was very open to the AMD study-prescribed diet, and enthusiastically accepted spinach samples even though she said she never “normally” used that food.

Participant D had a significant weight gain between baseline and the 90-day follow-up assessment. Higher prevalence of AMD in obese individuals is theorized to be correlated with a competition between adipose tissue and macular pigment for lutein and zeaxanthin (Nolan et al., 2004). Obesity is a risk factor for AMD (Nolan et al., 2004). Participant D was obese at baseline and gained 20 pounds during the course of the study. She complained of seeing “pink” light and “double arrows” at stop lights while driving. Participant D also very enthusiastically reported her new found “love” of kale and how she used this vegetable often in her salads. Participant D had joined a swimming program and was willing to take the study dietitian’s advice to start a walking program, especially with anticipated “nicer” weather to prevent any further weight gain.

Specific test results are compared in Table 2. The study revealed that of the eight eyes tested, one was considered blind. However, when compared to the VFQ-25, even with low logMAR scores, participant C’s VFQ-25 showed close to moderate vision impairment in her worse eye.

Table 2. Participant logMAR and VFQ-25 baseline results compared to standard results for the logMAR and VFQ-25.
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<table>
<thead>
<tr>
<th>Participant:</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td>Best eye logMAR</td>
<td>0.24</td>
<td>0.1</td>
<td>0.08</td>
<td>0.06</td>
</tr>
<tr>
<td>Worse eye</td>
<td>20/50</td>
<td>20/40</td>
<td>20/450</td>
<td>20/25</td>
</tr>
<tr>
<td>Worse eye logMAR</td>
<td>0.36</td>
<td>0.14</td>
<td>1.24</td>
<td>0.1</td>
</tr>
<tr>
<td>VFQ-25 baseline</td>
<td>94</td>
<td>97</td>
<td>73</td>
<td>78</td>
</tr>
<tr>
<td>Participant still driving</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
</tr>
</tbody>
</table>

**Standards:**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Blindness=logMAR</td>
<td>&gt;1.0</td>
</tr>
<tr>
<td>&quot;Can drive&quot; cut off</td>
<td></td>
</tr>
<tr>
<td>worse eye</td>
<td>20/200</td>
</tr>
<tr>
<td>VFQ-25 mild</td>
<td></td>
</tr>
<tr>
<td>impairment</td>
<td>87.59+-</td>
</tr>
<tr>
<td></td>
<td>12.78</td>
</tr>
<tr>
<td></td>
<td>75.32+-</td>
</tr>
<tr>
<td>VFQ-25 moderate</td>
<td>14.21</td>
</tr>
<tr>
<td></td>
<td>63.06+-</td>
</tr>
<tr>
<td>VFQ-25 severe</td>
<td>14.21</td>
</tr>
</tbody>
</table>
Visual acuity testing was measured in logMAR acuity with normally reported uncertainty (95% confidence interval) of 0.08 which was reported to be more reliable than others such as the Snellen eye chart (Smith, 2006). Blindness is diagnosed in that eye if the logMAR results are greater than 1.0, as seen in Table 2. The VFQ-25 ranges for mild, moderate and severe were based on reliability testing of the VFQ-25 compared to six other tests in a prior study (Altangeral, Spaeth, & Steinann, 2006). According to criteria in table 2 (driving cut-off and logMAR), participant C should not be driving. In the VFQ-25 all participants responded that they have “no difficulty at all” in driving.

Family history of AMD is risk factor for AMD (Klaver, Wolfs, Vingerling & Hofman, 1998). Half of the participants were not sure about AMD in their family, but B reported that her mother had AMD, and participant C reported that her mother “died young” and often “complained about her eyes” (Table 3).

Table 3. Participant-reported family history of AMD.

<table>
<thead>
<tr>
<th>Participant:</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td>Family history</td>
<td>Not sure</td>
<td>Mother</td>
<td>Mother</td>
<td>Not sure</td>
</tr>
<tr>
<td>with AMD complained of vision</td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tbody>
</table>

Study treatment impact on dietary patterns
The differences in lutein and zeaxanthin intake for each participant at baseline and post intervention are compared to the Ciulla et al., study (Ciulla et al., 2001) in Figure 1. Of 280 healthy volunteers from the general population, average intake for lutein was reported using a 122-item FFQ from the Women’s Health Initiative Program (Ciulla et al., 2001).

Figure 1. Reported intake of lutein and zeaxanthin in foods based on averages of food consumed in the last month at baseline and 90 days (T1 and T2).

Participants A, B, and C consumed about the same amount as the reported intake of the participants in the Ciulla study: roughly 1,100 micrograms, at baseline. Participant D reported baseline consumption of about 5,000 micrograms lutein and zeaxanthin, or roughly 5 times more than the average Ciulla participant. All participants increased their self-reported dietary intake of lutein and zeaxanthin comparing baseline to 90 days after the study interventions. Participant D had a 22% increase in dietary intake of lutein and zeaxanthin comparing baseline to the 90 day measurement. While participant A had an almost 50% increase (about 2,500 micrograms per day), and participants B and C had a
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slight increase in dietary lutein intake (about 1,500 micrograms each), comparing baseline to the end of the study, all fell short of the therapeutic “dose” for dietary lutein. Amounts or “dosage” in the 10,000 microgram range have been associated with stopped or slowed progression of AMD (Richer, 1999; Richer et al., 2004).

With the addition of the supplement, participant A and B would be consuming at least 11,000 micrograms lutein and zeaxanthin per day; participant C, 11,400 micrograms; and participant D, 16,100 micrograms lutein and zeaxanthin per day. Participants were asked to return any leftover supplements during their 90 day follow-up appointment. Only participant D had leftover study supplements, meaning she was not compliant with the supplement protocol (2 capsules, twice per day with food).

Total energy intake contributes to overweight, and being overweight has been associated with AMD. Fat intake can foster absorption of carotenoids, but should be balanced so it as not to result in excess calories. Figure 2 depicts individual results for calorie intake, on average, during the 90 days of the course of the study.

![Figure 2](image)

**Figure 2.** Mean total intake of kcalories from baseline and at 90 days post dietary intervention.
Participants B and C reported a low caloric intake compared to their needs. However, based on measured actual weights and calculated BMIs, participants B and C may have underreported their actual intake. In general, FFQ studies are limited in their reproducibility and validity because people tend to overestimate their servings of fruit and vegetables and to underreport servings of meat and dairy, which are more calorically dense (Feskanich et al., 1993).

**Impact on perceived vision**

VFQ-25 composite scores were reported in Table 2. Figure 3 illustrates comparisons of the near vision subscale within the VFQ-25. The near vision subscale is an important indicator for vision impairment especially for AMD. Participant A reported extreme difficulty in reading his favorite newspaper reports, which concur with his “moderate difficulty” rating on the VFQ-25 subscale score for near vision. All study participants reported at least a “mild impairment” according to the responses of the six-question subscale.

**Figure 3.** Participant-reported near vision from six VFQ-25 questions.
Perceived near vision did slightly improve after the study intervention for participants C and D. Although participant B reported her near vision as deteriorating in the VFQ-25 near vision scale, her comment at the 90 day visit was that her “dark spots” were “lightening.”

Impact on perceived quality of life

As shown in Figure 4, all participants perceived their overall vision or “vision quality of life” as being either fair or good at baseline. Self-reported ratings did not change after the 90 day intervention. Of the 4 participants, the females (B, C, and D) rated their overall health as good or very good both at baseline (shown in figure 4) and the same at the 90 day visit. Participant A increased his perception of overall health from good at baseline to very good 90 days later. This may have been because he was recovering from hip surgery, which occurred about a year before the 90-day check. How individuals may answer this question may be affected by many confounding factors such as how they are feeling the day they complete the questionnaire, weight loss, and recent surgery.
Discussion

Although the multiple vision-related testing procedures add up to about a two-hour clinic appointment, more time was added due to unexpected or unrelated questions, e.g. individual nutrition or eye health question unrelated to study. Also, if the participant exhibited symptoms and results of significant vision impairment, even in only one eye, extra time was needed to complete tests, and often tests needed to be repeated. Ideally, 2.5 hours need to be scheduled for the study type of interdisciplinary appointment.

The study participants consumed almost no green leafy vegetables at baseline, so it was time consuming to assess food preferences that include choices rich in lutein and zeaxanthin. Time was needed to explain how to purchase spinach, kale, Swiss chard, etc., how to prepare these vegetables, and suggestions for a variety of recipes. The study dietitian discussed the role of eggs as related to the macula for each participant. Handouts including recipes for egg preparation were helpful especially when photographs of the recipes were included. Both zeaxanthin- and lutein-rich fruits were also recommended to participants (e.g. kiwi, orange juice).

Richer (1999) suggested use of canned spinach for all study participants regardless of likes and dislikes. In the current study, participants could supplement their diets with lutein- and zeaxanthin-rich foods while still using foods they enjoyed because the dietitian assisted in meal planning. The participants seemed to appreciate the convenience of having dual dietitian/ophthalmologist access in one office. Each participant also seemed open to the follow-up telephone calls and mailings from the dietitian. However, disappointingly, overall dietary lutein intake did not increase to
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recommended level with diet alone. Therefore, a concomitant supplement may be prudent, such as in the Age-Related Eye Disease Study 2 [AREDS2] (National Eye Institute (NEI), 2013).

Overall, for our 90 day short study, no participants exhibited increased or new AMD in the healthy eye. Whether or not this was due to the dietary intervention is unknown. Participant D improved on every measure, despite a 20-pound weight gain. Participant A reported recognition of less “blips” on the Humphrey visual field testing during the second testing period. Also, his perception of near vision deteriorated between baseline and the second visit according to results of the VFQ-25 near vision scale.

Closely-monitored regular face-to-face dietitian visits ended after the 90 day study. Even though phone contact continued, no data was collected. Future studies should track (1) dietary compliance and (2) disease progression. During a telephone conversation, participant A complained that is was becoming very difficult to read small print. Participant B had the least amount of vision impairment in the group and did not change perceived overall health and eye health from baseline to the 90-day post intervention measure. She did miss a few more “blips” on the visual field testing, and missed an additional color chip or two at the 90-day testing, but these minor changes could have been due to individual alertness the day of the testing. Participant C had the highest amount of visual impairment in the study, but had a positive outlook, rating her overall health as “good” at both baseline and 90 days later. Also, participant C rated her visual health as “fair” at both measures, although the logMAR and Humphrey visual field tests identified blindness in her worse eye.
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All results reported here were helpful in understanding the current status of individual AMD, how the interventions may have affected that status, and also how AMD affects quality of life. The brightness acuity testing did not add anything new to the reported results, so this test could be eliminated from future research.

Limited compliance was exhibited in all four participants for the dietary plan. The study team had hoped for a total dietary intake of 4,000 micrograms of lutein and zeaxanthin in foods per day, minimum (e.g., amount in one-eighth cup cooked spinach), or up to 10,000 micrograms per day (e.g., one-third cup cooked spinach). Compared to other studies (Richer, 1999; Hammond, Johnson & Russell, 1997; Kopsell, Murphy, DeFreitas, Pfannkuch & Heimbach, 2006; Khackik et al., 2006) an intake of 10,000 micrograms of lutein and zeaxanthin in foods would have been favored, as one would not be reliant on a supplement. Foods contain a variety of nutrients such as other carotenoids, e.g. beta-carotene for night vision, so obtaining lutein and zeaxanthin from foods would be preferred over supplements for overall health.

Improved compliance may have been achieved by supplying foods containing the recommended amount of lutein (at least 4,000-12,000 micrograms per day), daily. Cost, however, was prohibitive. Others have trialed lutein and zeaxanthin dietary changes combined with a supplement (Hartmann et al., 2004). In the current study two 5,000-microgram capsules per day supplemented a deficit of lutein in the diet for all participants.

Having multiple methods to measure visual acuity, perceived visual field impairment, plus duplicated dietary assessments enhanced healthcare professional understanding and ability to treat individuals with AMD. For example, participant C,
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logMAR testing revealed poor vision in one eye; the Humphrey visual field test repeated these results while the VFQ-25 indicated below moderate visual impairment. For all participants in the dietary assessment component, the AFFQ served as a baseline to start a dietary interview where we were able to confirm information revealed on the AFFQ, or to deepen our understanding of participant food preferences or aversions.

The interdisciplinary team approach eased individual access to a dietitian. As indicated by the ophthalmology office experience, the presence of a dietitian as part of an eye clinic health team did impact nutrition intake and possibly their AMD for at least two participants, and possibly three, as evidenced by slight improvements in test results reported for participants. Increased awareness of the role that nutrition plays in eyesight was evidenced by small dietary and lifestyle changes for some and larger changes by all of the participants in the study.

With an aging population that may be open to information particularly concerning their eyes, a starting point for nutrition information may be an eye health discussion. Other eye clinics may benefit from the educational study brochures available from (Blinded for Review, 2007).

Declaration of Conflict of Interests

The authors have no conflict of interests to disclose.

Funding/ Acknowledgements

Swanson Healthcare (Fargo, ND) generously donated the lutein supplements for the study participants.
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International Large-scale Student Assessments and National Policy-making in Education

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Abstract:
The presentation will discuss possible ways of using international large-scale student assessments datasets for national policy-making in education. It explores methodological issues- possibilities and limitations; theoretical assumptions of international large-scale student assessments (ILSA) conceptualizations- epistemological perspectives. It is work in progress of the report on the State of the Art in the area of “Theory and Practice of Using ILSA Datasets for National Evidence-based Policymaking”- international research network that was established in 2014 within World Education Research Association.

Type: work in progress

Introduction

A special type of research carried out within applied epistemology, are studies using measurement instruments and procedures of quantification. These studies measure the extent and depth of the 'pool of knowledge' held by society and social groups. Moreover, in the international sphere compare the volume and quality of the knowledge they acquire different parts of the population, such as school-age generation. In this regard, we can mention the international studies of educational outcomes, coordinated by the international centres: International Association for the Evaluation of Educational Achievement (IEA)- Trends in International Mathematics and Science Study (TIMSS), Progress in International Reading Literacy Study (PIRLS), Civic Education Study / International Civic and Citizenship
Evidence-based educational policy making has been adopted around the world, with Wiseman (2010, p. 2) stating that it is “the most frequently reported method used by politicians and policymakers”. This movement has provided support, among others, to an emphasis on the use of student assessment data in the policy process (Campbell & Levin, 2009; in Knight, Lietz, Nugroho & Tobin, 2012, p. 15)

International assessments have become a major focus of national education policies. National governments can use the results from international assessments to carry out reforms aimed at resolving issues highlighted by the results of the assessments (Rey, 2010, pp. 143-144). They bring a huge amount of indicators and information on educational systems, but these don’t necessary fit to on-going reforms or government goals. Moreover, governments sometimes only use the ranking and superficial features of the international achievement surveys, not the more detailed analyses. Despite the fashionable trends in evidence-based education, one cannot be convinced that policy has to be driven only by numbers, with the risk that policy-makers have too much say in the indicators used. The challenge, both for researchers and policy-makers, therefore, is to consider that the aim to improve the information on educational systems has to be pursued for their common interests. Comparative external evaluations may continue to be a key means of doing this, but there needs to be an acknowledgement that policy and research processes cannot always run on the same timescales. (Rey, 2010, p. 154)
Therefore to fulfil the gap between policy and research is essential for both of them. With the international research network\(^1\) we would like to minimize this gap and raise aware of possibilities and limitations of using international large-scale datasets for national policy making.

**International research network**

To achieve this general objective a synthesis report on the State of the Art is a first priority of the research network.

**Research problem**

Very often league tables are used as the main or only source in deriving political decisions without accounting for the local and global contexts. Therefore we would like to establish a proper methodological approach of using ILSA’s data in secondary analysis as the source of political decisions in policy making, an evidence-based approach.

**Research questions:**

1. What are the current practices in using ILSA data for policy making worldwide?
2. What are the best practices of using ILSA data for national policy-making with regard to the diversity of the educational systems?

The intended outcomes of WERA international research network are: 1. Establish common practices for reporting the results from ILSA nationally raising the awareness of methodological issues; 2. Advise national authorities in national policy-making.

*State of the Art report (presented as a work in progress)* will synthesise the core of knowledge from two approaches: methodological and theoretical. The research methodology will be composed of two main distinct aspects which complement each other- literature review and empirical data collection (questionnaire for IEA national research coordinators). The core of the methodology used in this paper will be literature review, accompanied with a case study from Slovenia (the research that grounded the base to establish international research network).

\(^1\) “Theory and Practice of Using ILSA Datasets for National Evidence-based Policymaking”- international research network that was established in 2014 within World Education Research Association (WERA).
Case study: Slovenia

Research that was conducted in 2010 tried to explore the ‘impacts’ of international comparative studies (and international large-scale student assessments in particular) on national education policy-making in Slovenia, in the sample three groups of respondents were included:

a) National research coordinators from Slovenia (NRC): TIMSS and TIMSS Advanced, PISA, CIVED/ICCS, PIRLS, SITES;
b) Expert and advisory board (EAB);
c) Policy-making (PM).

Instruments used:
- first phase (structured interviews)
- second phase (semi-structured face-to-face interviews)

All participants were given all questions, but the NRC’s answered, within the topic of concrete impacts (research question four), only about the study that they were coordinating.

The interviews were focused on five major research questions, relating to:
1. the impact of international education studies on national policy-making in Slovenia (respondents general feelings about impacts);
2. reasons for participating (focused on studies and particular cycles);
3. media and expert interests (which of the studies have (potentially) major media and experts interests);
4. concrete impact of all data collections (regarding particular cycles); impacts on curriculum and/or some syllabuses);
5. additional use of collected data.

In the semi-structured interviews, respondents were asked for additional information about the uses of international large-scale student assessment results as a tool for national progress as well as obstacles/limitations; and for ways in which the international data could be used in real-world policy-making situations and the possible implications of international large-scale student assessments for Slovenia were discussed.

Summarizing the results:

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From the first phase (using structured interviews), it is clear that all three groups of respondents expose the great impact of international comparative studies on Slovenian national policy-making in education, especially for evidence-based policy. However, they are all in agreement that more secondary analysis is needed. This is actually the first conclusion, that in Slovenia more analyses that are socio-culturally oriented are need. In addition, socio-cultural orientation could be attained using national assessments or with some additional data analysis combining international and national assessments (actually parts of the mentioned assessments, because simple interpretations between national and international assessments are not possible). It seems that estimations about the impacts of international comparative studies (especially emphasizing the impacts) are still more declarative statements than everyday reality and that participating in these studies is seen of as important due to being placed in international league tables.

On the contrary, with second phase (using semi-structured interviews with NRCs) aim was to identify some of the concrete direct (e.g. from TIMSS study) and indirect impacts. Since indirect impacts are often not measurable at all, estimations about impacts could be misleading. From this phase, it is also clear that some of the results from e.g. TIMSS have leads to changing curriculum (e.g. Mathematics syllabus), while other results e.g. PIRLS and National Reading Strategy are more important as a declarative statement which in Slovenia is compulsory, but it has still not been realized in everyday school reality.

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1. Robust and Specific Personality Traits Predicting School Grades over Compulsory Education in Two Countries

2. Educational Psychology

3. Paper Session

4. The role of students' personality in their academic achievement over compulsory education was investigated in Slovenia and Russia. The 5 robust and 13 specific personality traits showed significant incremental predictive value in explaining the school grades, over and beyond the background variables. The associations of openness, conscientiousness, and low extraversion were found consistent across the school courses, students' age and gender, methods of personality assessment, and country. Implications for education will be highlighted.

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Abstract

Incremental predictive value of 5 robust and 13 specific personality traits for school grades over and beyond age, gender, parental education, and country was examined in Russian and Slovene students aged from 8 to 15 years. Final grades in two core school courses over the nine-year compulsory schooling, mathematics and language (Russian/Slovene) were considered as measures of academic success from Grade 3 through Grade 9. The Inventory of Child Individual Differences – Short was employed to assess student personality. To test the consistency of personality – achievement associations, personality data was collected from both mothers (Russia: $N = 994$, Slovenia: $N = 624$) and adolescents (Russia: $N = 481$, Slovenia: $N = 310$). The robust personality traits uniquely predicted the school grades, improving the criteria variance by 11% to 14% over the background variables. When the specific personality traits were considered in hierarchical regression analyses, the traits contributed additional 14% to 18% to the variance explained. Across the countries, informants and school courses, younger age, higher parental education, female gender, openness (especially subjectively perceived intelligence), and low extraversion (especially low sociability) predicted the course grades. Conscientiousness was also predictive of achievement, with low distractibility contributing to mathematics grades and organized behavior predicting success in language. No moderator effects of age and country were revealed. Identification of non-cognitive factors predicting academic achievement over compulsory schooling obtained in this study has important implications for education. It allows educators to predict who will perform better or worse academically and provides background to direct students towards educational programs in which they are likely to succeed. Teachers may be also advised how to adjust their work with students differing in personality in order to compensate for their weaknesses and to enhance their strengths related to academic performance.
1. Cognitive Effectiveness of a Four-Dimensional Revision of Textbook Fragments: A Quasi-Experimental Study

2. Other Areas of Education

3. Poster Session

4. Cognitive effectiveness of four original versus linguistically revised thematic fragments of geography textbooks was tested in a quasi-experimental study with 247 nine-graders of compulsory school. The original fragments were revised in cohesion, argumentation, considerateness, and coherence. Controlling for the students’ previous school grades in geography, a considerable positive effect of reading the revised fragments on comprehension was revealed. Low achievers who read the revised fragments caught-up in comprehension with high achievers who read the originals.

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Abstract

In a quasi-experimental study, we examined the effect of a revision of four thematically different textual fragments taken from four textbooks of geography (Grade 9 of compulsory school) on students' comprehension. The original fragments were linguistically revised in four inter-related dimensions: Cohesion, argumentation, considerateness, and coherence. An initial sample of 247 students (50% girls) was divided into groups reading the original and the revised fragments of the four thematic units. The design was such as to permit each group of students to function both as a control and experimental group. The students’ comprehension was then measured using tests of knowledge. Controlling for the students’ previous school grades in geography, reading the revised fragments resulted in considerably higher test-scores across the thematic units. We further investigated the extent to which (i) the differences between test-scores of low- and high achievers in geography decrease when the former read the revised fragments and the latter read the original fragments, and (ii) the low- and high-achieving students differ in comprehension when reading the revised fragments as compared to the original ones. The results suggested that low achievers (graded sufficient or good at the end of the previous school year) who read the revised fragments scored at the level of high achievers (graded excellent) who read the original fragments. Nevertheless, an exposure to the revised texts showed a substantial advantage in comprehension for both the low- and the high-achieving group. The technique and procedure of text improvements employed in this study could, with some adjustments, be transformed into a tool for a large-scale evaluation and development of school textbooks.

Introduction

School textbooks are often the subject of criticism that is normally focused on various aspects of external events (system of confirmation and purchasing, pricing, etc.) or the external appearance of a textbook or its perceived attractiveness for young readers (e.g., the content and quality of photographs). Yet the essence of textbooks, i.e. the semantic and cognitive perceptions created by the contents of a textbook in the minds of students, as well as the structure and contents of textbook messages received by students while reading or studying from textbooks, is rarely criticized (Justin, 2010a). By merely changing the structure of a textbook (semantic structure, vocabulary, syntactic, semantic and textual characteristics), we can improve and at the same time facilitate students' successful retrieval of information read, their comprehension of the cognitive
contents of a text, and use of the information learned in new contexts (Justin, 2010b, 2012; Mikk, 2002). Through the premeditated creation of a textbook fragment in line with research findings on its cognitive effectiveness, it is therefore possible to create essentially more effective texts than those written solely on the basis of authors' expertise, their personal creative abilities and teaching experience (Justin, 2010b).

A Quasi-Experimental Approach to Studying the Cognitive Effectiveness of School Textbooks

The approach used to study the cognitive effectiveness of school textbooks is (quasi)experimental and mostly deals with the question how a certain (linguistic, visible) method of conveying information in textbooks influences students’ retrieval, comprehension and use of such information, as well as the achievement of educational goals (Justin, 2010a; Mikk, 2000; Selander, Thoey, & Lorentzen, 2002). The findings of (quasi)experimental studies of the effect of textbooks on users are significant both in the creation and development of cognitively effective and student-friendly textbooks, as well as in the expert evaluation of their quality.

In (quasi)experiments, authors generally select samples of textbook fragments, and revise (generally improve) one or more characteristics (e.g., semantic complexity of text, vocabulary difficulty, vocabulary abstractness, sentence length). Then, in supervised procedures, usually comprising an experimental and a control group (matched in characteristics which, alongside the presumed variations in the cognitive effectiveness of texts, could influence the learning result), they compare the effects of the original and revised versions of texts on the learning outcomes of participants (memory recall, comprehension of and conclusions on what they read). In this study, we selected for revision the following characteristics of a textbook fragment, which are interconnected: its cohesion, considerateness, argumentation structure, and coherence (Beck, McKeown, & Gromoll, 1989; Julkunen, 1991; Mikk, 2000; Wilkes, 1997).

Four Characteristics of the Text Affecting Its Cognitive Effectiveness

Cohesion is the internal connectedness of a text, how it 'sticks together', where the reader recognizes the central theme to which most of the sentences are connected, and where the links between integral parts of the text are solid (e.g., Klare, 1985). In reading such a text, the reader can more easily represent the meaning of what he/she has read as a whole, since each individual meaning is linked to other meanings. This naturally has a favorable effect on the reader's memory
retrieval of information, and above all on his comprehension of the text. Cohesion is further strengthened if, for example, some key words in the text are repeated, the text has a clear and orderly argumentation flow (supported by conjunctionally used expressions between parts of the text, e.g. 'since', 'because', 'although', 'as', 'however', 'further', etc.), phrases and sentences follow one another in a sequence reflecting a sequence of events, the causal and persuasive connections between phenomena are indicated in the text, a general statement is followed by specific statements, etc. (Justin, 2004).

The considerateness of a text refers to the communication of unambiguous and essential information, close and direct reference (e.g., the sequence of a sentence adequately reflects the cause – effect relation), which facilitates the reader's reception and comprehension of information (Beck et al., 1989). As an example, we are presenting three text fragments from a Slovene school textbook:

/1/ Napoleon's army rested for a few weeks. It was exhausted from the long marches and battles.

/2/ Long marches and battles exhausted Napoleon's army. It rested for a few weeks.

/3/ Long marches and battles exhausted Napoleon's army. Therefore, it rested for a few weeks.

Fragment /1/ does not facilitate comprehension of the causal connection it expresses. Namely, it first describes the consequence and only afterwards the cause. Fragment /2/ facilitates comprehension to the extent that the sequence of two sentences reflects the cause – effect relation. Fragment /3/ best facilitates comprehension of the causal connection, which it directly expresses using the conjunction 'therefore' (Justin, Zupančič, & Rožman, 2012).

Coherence refers to the consistency and orderliness of meanings in a text, and the orderliness of the relation between the structure of the text and the structure of referents (things, events and phenomena) referred to in the text. A coherent text is homogeneous in meaning, logically correct (using linguistic means it forms a representation of the world in which time, space and events are logically connected; Justin, 2004), consistent with the rules of text building (Wales, 1994), and maintains continuity of meaning (Beaugrande & de Dressler, 1992).
Presented below is an example of an illogical connection between the time and spatial dimensions of a representation in a text (Justin, 2004; Justin et al., 2012) taken from a Slovene school textbook that speaks of the origin of the city of Ljubljana:

/4/ The capital city of the Republic of Slovenia – Ljubljana – originated at the meeting point of the Ljubljana basin and the marshes.

The main referent of the sentence, the city, is spatially determined: the meeting point of the basin and the marshes. The sentence speaks of the origin of the city in the Middle Ages. The capital city of the Republic of Slovenia – Ljubljana – certainly did not originate at that time at the meeting point of the basin and the marshes.

The text can remain coherent if, at some point, a new time, place, new persons, a new theme, new events or a new situation are introduced. However, this must be done in an orderly and logical manner, and according to the rules of text building. One of these rules requires that any change of time should be specifically designated in the text. By designating a change of time, the author of sentence /4/ in the Slovene textbook could maintain a historical perspective:

/5/ At the meeting point of the Ljubljana basin and the marshes, a city began to develop which, much later, in the 20th century, would become the capital of the Republic of Slovenia – Ljubljana.

By improving the argumentation structure of texts, which we presumably achieved, at least partially, through the greater considerateness, cohesion and coherence of revised texts in school textbooks, we strove to eliminate as many gaps in the text as possible. Gaps are those places where the reader has to make conclusions that are not directly expressed (Sperber & Wilson, 1986). In a large majority of – didactic and other – texts, the reader will, by 'decoding' the meaning of words that comprise the text, repeat only part of the message; he/she will repeat the remainder by drawing inferences that bridge or fill the gaps in the text. Texts that have many such gaps (they are more implicit) are cognitively more complex than those with fewer gaps (they are more explicit) (Van Dijk & Kintch, 1983). In order to comprehend a text in a textbook as a meaningful whole, the student must, in some places, draw inferences that are not directly expressed in the text – he/she has to fill these gaps. As an example (Justin, 2010a), we are presenting a sentence from a Slovene geography textbook used in this study:
The textile industry was gradually losing its leading position, but through the enlargement of its plants and modernization, it continues to be an important exporter of its products.

In this sentence, the student needs to make two bridging inferences:

It is good for an industry to export products. An industry can export only if it has sufficiently large and modern production capacities.

The Present Study

The first aim of our study was to develop, on the basis of critical linguistic analysis, a procedure for improving original school textbook fragments by changing their argumentation structure (cohesion, considerateness, coherence, bridging of gaps), i.e. revising texts for the purpose of improving their cognitive effectiveness. In doing so, we focused on fragments of geography textbooks for the 9th (last) grade of compulsory education, because geography is a subject comprising components of the natural and social sciences, geography classes are compulsory for the entire basic elementary school population, and all 9th grade students had previously attended three years of geography classes. Using a quasi-experimental procedure, our second aim was to test: (i) whether the effect of textual revision (if it exists) on students’ comprehension is preserved with their background knowledge in the field, which also contributes to comprehension (e.g., Chiesi, Spilich, & Voss, 1979; Justin, 2010a; Justin et al., 2012), controlled for; (ii) the extent to which the differences in comprehension between low- and high course achievers in geography level off when the former read the revised textbook fragments and the latter read the original fragments, and (iii) how much low- and high-achieving students benefit in comprehension when reading the revised fragments as compared to the original ones.

Method

Participants

Total sample. We randomly sampled 8 public compulsory schools distributed over three main regions of the country. In each school, we further randomly selected one or two school classes of students attending grade 9 (age 14 to 15 years); in total, 14 school classes were included. Following this procedure, 247 students (approx. 50% girls) whose parents provided a written consent, were selected to participate. Because a few students were not present in school at one of
two experimental sessions (exceptions were absent at both), the Ns presented in the Results section deviate from the sample-size reported here.

Subsamples. In order to estimate the effect of reading the revised texts on comprehension with low- and high-achievers in geography, we created two subsamples based on school grades distribution of the total sample; 170 students of the total sample were included. Low achievers (73 students, i.e. 42.9%) were the participants who were graded sufficient or good by their geography teachers at the end of the previous school year, and high achievers (97 students, i.e. 57.1%) were those who were graded excellent.

Measures and Instruments

Textbook fragments. For the purpose of the revision, we selected text fragments from four Slovene geography textbooks for the 9th grade of elementary school, which were approved by the Council of Experts of the Republic of Slovenia for General Education. We selected the fragments from four thematically different textbook units that have not been taught in the sampled school classes yet (the assurance was provided by the students' geography teachers), i.e. the units of agriculture, settlement (of Slovenia), between hills and plains (hereinafter: hills), and industry. The fragments were further selected according to an additional criterion – each of them had to be conceptually thorough and comprise approximately 300 words without thematic interruption. The four original fragments were then revised.

Tests of comprehension. We assessed the students' level of comprehension of the thematic fragments read (original or revised) using four multiple-choice tests (a separate test for each thematic fragment). The tests were created for the purpose of this study and were preliminary tested for discriminative validity with a convenient sample of nine-graders (n = 132). According to the results, the tests were adjusted. Each of the four adjusted tests included 19 questions, except for the one referring to hills which consisted of 20 questions. The questions required comprehension of relations among phenomena (causal relations, influences, reasons for undertaking actions etc.) and not merely memory recall. There were four response options to each question with only one being correct. However, two questions of the test referring to settlement required from students to indicate whether each of four assertions (possible responses) is either correct or wrong; a correct answer was always scored one point and the sum of correct answers
represented a test-score (per thematic fragment). The students who read either the original or the revised version of the same thematic fragment responded to the same test.

*School grades.* The participants’ final grades in geography (1 = failed, 2 = sufficient, 3 = good, 4 = very good, 5 = excellent) assigned by their geography teacher at the end of the previous school year were taken as a proxy of their background knowledge in geography. Final grades represent an overall teacher assessment of a student’s academic achievement in a given course; they are based on the student’s written and oral examination performance over a school year. Although partly subjective, the final grades of Slovene nine-graders, at least in mathematics (Puklek Levpušček, Zupančič, & Sočan, 2013) and Slovene language (Puklek Levpušček & Zupančič, 2009), show strong correlations with their National Examination Test scores (an objective measure) in the respective school subject.

*Procedure*

*The revision of textual fragments.* First we performed a thorough, critical analysis of selected fragments, i.e. we critically examined the texts in those dimensions where we intended to make improvements. These are the dimensions that have already been mentioned: cohesion, considerateness, argumentation structure (particularly gap filling), and coherence. Below is an example of an analysis of a small part of one of the original fragments on the topic of hills (Justin et al., 2012).

/8/ In the past, the hilly region referred to by the locals as Gorički bregi was one of the most agricultural regions in Slovenia, although the farming conditions are not good. There is little flatland, the soils are leached and for this reason poorly fertile. The most developed activities are livestock farming and fruit-growing, there are very few vineyards. Because the land holdings are very fragmented, small farms were not able to modernize crop production; thus, so-called agricultural overpopulation occurred. This means that given the natural conditions in the region, too many people were making a living out of agriculture. Farmers attempted to improve their circumstances by doing seasonal work abroad, primarily in Austria, and by emigrating. For this reason agriculture is, to a considerable extent, still traditional, but this had a favorable effect on the region because it was left untouched. Although Goričko is the least developed and most remote Slovene region, precisely its preserved elementary state is its best legacy for the future.

The coherence of texts is influenced, among others, by the use of tenses (past tense, present tense) as well as the conjunctive and argumentative use of expressions such as 'since', 'because', 'as', etc. We shall first demonstrate how tenses are used in the original fragment.
… region … was past one of the most agricultural regions … although the farming conditions are not present good … The soils are present leached … The most developed activities are present livestock farming and fruit-growing, there are present very few vineyards. Because the land holdings are present very fragmented, small farms were not able past to modernize crop production … For this reason agriculture is present, to a considerable extent, still traditional, but this had a favorable effect past on the landscape because it was left past untouched … Goričko is present the least developed …

Due to the alternating use of verb tenses, the text is ambiguous. A student wonders: is the fragment speaking about the present or the past state? The text is not only ambiguous, but, for the student, at least incoherent. Let us examine the following sentence:

/10/ Because the land holdings are present fragmented, small farms were not able past to modernize crop production …

The student finds it hard to understand how the present fragmentation of land holdings could have prevented farmers from modernizing crop production. Even the adult reader wonders: Does this mean that the land holdings were fragmented in the past and are still fragmented today? Moreover, the phrase 'small farms' in this sentence functions as a definite description. For this reason, a parallel conclusion suggests itself:

/11/ If the land holdings were not fragmented, small farms would be able to modernize crop production.

Namely, the main characteristic of definite descriptions is that they refer to things or to the state of things as they are; they are referents which do not depend on the variables described in other parts of the sentence.

Presented next is an example of the use of the argumentative conjunction 'because', as well as the explanatory phrase ‘thus’ and 'this means that', in the first two sentences of the original text fragment.

/12/ Because the land holdings are very fragmented, small farms were not able to modernize crop production; thus, so-called agricultural overpopulation occurred. This means that given the natural conditions in the region, too many people were making a living out of agriculture.

The conjunction 'because' gives the impression that the fragmentation of land holdings is the reason for the inability to modernize crop production. The word 'thus’ leads to the conclusion that the inability to modernize is the reason for overpopulation. A major obstacle for interpretation
appears when we read the definition of overpopulation: *given the natural conditions*, too many people were making a living out of agriculture. What is the obstacle? In /12/ we first learn that overpopulation occurred *because* small farms were not able to modernize crop production. Immediately afterwards, the text informs us that overpopulation is linked to (unfavorable) natural conditions. The first or the second? Furthermore, it is not easy to draw inferences about what is meant by 'natural conditions'. It will be necessary to go back a few sentences in the text, to the place where it speaks of there being little flatland, leached soil and poor fertility. But how can the student relate this to the question about modernizing crop production? Among the possible, though by all means risky, inferences that are in no way supported by the text and could hardly be made by the students, is the following:

/13/ The poor natural conditions (unleveled surface, leached and poorly fertile soil) and fragmented land holdings can be compensated (?) by modern crop production, i.e. by the use of machines (?) and fertilizers.

This analysis illustrates the cluster of uncertain inferences that need to be drawn by the student attempting to construct a coherent interpretation of the text, and the obstacles he/she meets by a poorly constructed text. The parts of fragments presented are all the more problematic for the student, who, having little previous knowledge of the subject, finds it all the harder to guess which inferences will bring him closest to the author's communicative intention that he/she believes is incorporated in the written text.

The student not only has difficulty drawing adequate inferences because he lacks sufficient previous knowledge, but also because the disorderly text leads one to draw inferences that are at least partly contradictory. The text should make it easier, and not more difficult, to draw inferences that we use to relate the causes and consequences, factors and states which the factors influence. An example of how the drawing of inferences is further rendered difficult can be seen in the remainder of the original text:

/14/ Farmers attempted to improve their circumstances by doing seasonal work abroad, primarily in Austria, and by emigrating. For this reason agriculture is, to a considerable extent, still traditional, but this had a favorable effect on the region because it was left untouched.

Here the connecting phrase, 'for this reason', again causes confusion. Its use generally directs attention to the *previous* sentence. One would therefore infer that seasonal work and emigration are reasons why agriculture in the Goričko region is still traditional. The writer, however,
probably intended to say that the reason for this was in something that is mentioned further back in the text, namely, in the fragmentation of land holdings and/or the inability to modernize crop production in the past. Adult readers can speculate on that. But for students, all of this is entirely unclear.

In addition, something else happens in this part of the text. If, up to this point, the entire argumentation flow leads to negative consequences (poverty, underdevelopment, overpopulation), all of a sudden this flow takes a positive direction. We now learn that undeveloped agriculture had a favorable effect on the region. This favorable effect is apparently visible in the untouched elementary state of the region. However, the region can in no way be untouched. For the inhabitants have cut down forests, created orchards and pastures, are cultivating fields, etc. This is followed by an even more disputable part:

/15/ Although Goričko is the least developed and most remote Slovene region, precisely its preserved elementary state is its best legacy for the future.

The transition to the present, and even the future, finally occurs here. The landscape is no longer untouched, but has preserved its elementary state. Our attention, however, should be focused primarily on the assertion that Goričko is the most remote Slovene region. The question one needs to ask is: for whom is this region most remote? Probably for someone living (and writing textbooks) in Ljubljana or Koper. But Goričko is by all means not the most remote Slovene region for someone living in Murska Sobota, being only a few kilometers away. The judgment that Goričko is a remote region is therefore an egocentric judgment made from a specific point of view, probably from the perspective of central Slovenia. But – is not the decentralization of spatial perception one of the key conditions of geographical thinking?

This is followed by the judgment that underdeveloped agriculture is the best legacy for the future. Of course this judgment, expressed with a metaphor (legacy), is extremely puzzling to elementary school students. This was also shown in a comprehension test which we will report on. The students were not able to relate two metaphors – the metaphor of untouched elementary state, and the metaphor of legacy. Even an adult reader cannot be entirely convinced that the writer's intention in using the term 'legacy' was to point to the possibilities of future development of tourism.
The revised text of the original fragment present above was as follows:

/The hilly region referred to by the locals as Gorički bregi was an agricultural region in the past. However, the conditions for farming were poor. Namely, the ground is uneven and water has removed a great many substances from the soil that are necessary for the growth of plants. This is why farmers were more occupied with livestock farming and fruit-growing than agriculture and vine growing. Moreover, the land was divided into a multitude of small farms that gave only a small yield and income. So, land holders earned too little to be able to buy machines and fertilizers with which to improve the soil. For all these reasons, some farmers occasionally worked abroad (primarily in Austria) or moved elsewhere. If individual farm families in a specific agricultural region have little land, which on top of that is even poor, we say that the region is agriculturally overpopulated. The agriculture was thus outdated. Nevertheless, this had at least one good consequence. Namely, the region has remained such as it was a hundred years ago. Although it is still the least developed Slovene region, its preservation will prove highly interesting to tourists in future.

The revision strongly emphasizes argumentation. The expressions that are the carriers of the argumentation flow ('but', 'namely', 'because', etc.) help the student to more easily follow the communicative intention of the author of the text, and to more easily create a mental model of the situation being discussed in the text.

The quasi-experiment. First, consents from school principals, principal teachers, and students' parents were obtained. Then, we carried out the procedure in school classes. In each class, an experimenter presented the purpose of the study and asked students to participate. Next, she distributed the thematic fragments (four units, referring to agriculture, settlement, hills, and industry) to the participants according to a permutation principle. The students in each class were randomly assigned to one of four groups: Group 1 read original fragments A (settlement) and B (industry), and revised fragments C (hills) and D (agriculture); The students in group 2 read the original A, revised B, revised C, and original D fragments etc. (Table 1). Such a design permitted each group of students to function both as the control and experimental group.

Table 1

<table>
<thead>
<tr>
<th>Group</th>
<th>Settlement (A)</th>
<th>Industry (B)</th>
<th>Hills (C)</th>
<th>Agriculture (D)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Original</td>
<td>Original</td>
<td>Revised</td>
<td>Revised</td>
</tr>
</tbody>
</table>
Note: The rank-order was also rotated randomly within each group to control for possible effects of decreased motivation, concentration or newly acquired problem solving skills.

Each participant thus read four thematically different fragments (15 minutes each) over two sessions, which were held a few days apart so that a student read only two fragments per session. In each session, the students read the first fragment individually and then responded to the test-questions related to the theme of the first fragment. After that they read the second fragment and then responded to the respective test-questions. While responding to the questions, they were allowed to use the text they have just read. The students who shared the same school desk did not read the same text and consequently, they did not respond to the same test-questions concurrently.

The school grades in geography were taken from school records by the experimenter and matched with the codes assigned to an individual participant’s set of written material (a selected version of the text fragment and corresponding test sheets). The ‘matching list’ was destroyed immediately after the test material was collected and checked.

Results
The Effect of Reading the Revised Textual Fragments on Comprehension Controlled for Students' School Grades in Geography
Table 2 displays means (M) and standard deviations (SD) of the students' test-scores across the four thematic fragments (agriculture, settlement, hills, and industry) after reading the original and the revised text.

Table 2.

<table>
<thead>
<tr>
<th>Versions of the Text by Units</th>
<th>N</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agriculture</td>
<td>117</td>
<td>10.35</td>
<td>3.43</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>2</td>
<td>Total</td>
</tr>
<tr>
<td>----------------</td>
<td>------------</td>
<td>------------</td>
<td>---------</td>
</tr>
<tr>
<td>Agriculture</td>
<td>115</td>
<td>12.93</td>
<td>3.76</td>
</tr>
<tr>
<td>Total</td>
<td>232</td>
<td>11.63</td>
<td>3.82</td>
</tr>
<tr>
<td>Settlement</td>
<td>116</td>
<td>15.11</td>
<td>4.29</td>
</tr>
<tr>
<td></td>
<td>112</td>
<td>17.97</td>
<td>4.01</td>
</tr>
<tr>
<td>Total</td>
<td>228</td>
<td>16.43</td>
<td>4.36</td>
</tr>
<tr>
<td>Hills</td>
<td>114</td>
<td>12.25</td>
<td>3.29</td>
</tr>
<tr>
<td></td>
<td>114</td>
<td>15.15</td>
<td>3.58</td>
</tr>
<tr>
<td>Total</td>
<td>228</td>
<td>13.70</td>
<td>3.73</td>
</tr>
<tr>
<td>Industry</td>
<td>111</td>
<td>9.44</td>
<td>3.06</td>
</tr>
<tr>
<td></td>
<td>113</td>
<td>13.99</td>
<td>3.65</td>
</tr>
<tr>
<td>Total</td>
<td>224</td>
<td>11.74</td>
<td>4.06</td>
</tr>
</tbody>
</table>

Note: 1 = Original fragment read, 2 = Revised fragment read. A maximum score concerning agriculture, settlement, hills and industry was 19, 25, 20 and 19, respectively.

The Leven's test indicated that the variance of the test-scores was homogeneous for groups reading the original and the revised fragments of the text (agriculture: $F_{(1, 230)} > 0.05, p = 0.47$; settlement: $F_{(1, 226)} = 2.44, p > 0.05$; hills: $F_{(1, 226)} = 0.75, p > 0.05$; industry $F_{(1, 222)} = 1.69, p > 0.05$). Next, the one-way analysis of variance for independent samples was used to test for differences in comprehension between the students who read the original and those who read the revised textual fragments. The results suggested that the latter scored significantly higher on the test across the four thematic units (agriculture: $F = 29.84, p < 0.001$; settlement: $F = 23.57, p < 0.001$; hills: $F = 40.65, p < 0.001$; industry: $F = 101.94, p < 0.001$). However, the students’ background knowledge in geography (as captured by their school grades in geography at the end of the previous school year) was also considered to contribute to their comprehension (test-scores). As presented in Table 3, the students who were assigned higher final grades in geography by their teachers indeed scored significantly higher on the test across the four thematic units, and the version of the fragment read (original or revised).
Table 3.

*Pearson's Correlation Coefficients of Students' School Grades in Geography with Their Test-Scores after Reading the Original and the Revised Textual Fragments*

<table>
<thead>
<tr>
<th></th>
<th>Original Fragment</th>
<th>Revised Fragment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agriculture</td>
<td>.49**</td>
<td>.43**</td>
</tr>
<tr>
<td>Settlement</td>
<td>.49**</td>
<td>.55**</td>
</tr>
<tr>
<td>Hills</td>
<td>.58**</td>
<td>.43**</td>
</tr>
<tr>
<td>Industry</td>
<td>.34**</td>
<td>.42**</td>
</tr>
</tbody>
</table>

*Note:* **p < .01 (two-tailed).*

Due to the significant and moderate positive correlations (Table 3), we controlled for the school grades by means of analyses of covariance with the version of the textual fragment as an independent variable, the respective test-score as a dependent variable, and the grade in geography as a covariate.

The students' grade in geography and the version of the textual fragment read jointly explained from 29% to 41% of variance in their test-scores across the thematic units (agriculture: $R^2 = 0.30$; Adj. $R^2 = 0.29$; settlement: $R^2 = 0.34$; Adj. $R^2 = 0.33$; hills: $R^2 = 0.36$; Adj. $R^2 = 0.36$; industry: $R^2 = 0.42$; Adj. $R^2 = 0.41$). The students' grades significantly contributed to their test-scores (agriculture: $F = 60.33$, $p < 0.001$; settlement: $F = 82.33$, $p < 0.001$; hills: $F = 74.91$, $p < 0.001$; industry: $F = 38.90$, $p < 0.001$). The students with better background knowledge in geography (grades) scored higher than those who were assigned lower grades by their teachers at the end of the previous school year. Nevertheless, controlling for the grades, the students who read the revised fragments of the text still consistently scored higher on the test than their class-mates who read the original fragments (agriculture: $F = 32.47$, $p < 0.001$; settlement: $F = 30.09$, $p < 0.001$; hills: $F = 59.22$, $p < 0.001$; industry: $F = 124.63$, $p < 0.001$).

* Differences between Test-Scores of Low-Achievers Reading the Revised Text Fragments and High Achievers Reading the Original Fragments
Table 4 shows means and standard deviations of the test-scores for each of the four thematic units by grades in geography (low achievers and high achievers) and by the version of the fragment read before the test (original or revised).

Table 4.

**Test-Scores after Reading the Original and the Revised Version of Textual Fragments in Low- and High Achieving Students**

<table>
<thead>
<tr>
<th>Achievement</th>
<th>Version</th>
<th>$M_{set}$</th>
<th>$SD_{set}$</th>
<th>$N_{set}$</th>
<th>$M_{ind}$</th>
<th>$SD_{ind}$</th>
<th>$N_{ind}$</th>
<th>$M_{hil}$</th>
<th>$SD_{hil}$</th>
<th>$N_{hil}$</th>
<th>$M_{agr}$</th>
<th>$SD_{agr}$</th>
<th>$N_{agr}$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low</td>
<td>Original</td>
<td>12.11</td>
<td>3.28</td>
<td>36</td>
<td>8.03</td>
<td>2.85</td>
<td>30</td>
<td>9.77</td>
<td>3.31</td>
<td>30</td>
<td>8.05</td>
<td>2.73</td>
<td>37</td>
</tr>
<tr>
<td></td>
<td>Revised</td>
<td>15.07</td>
<td>4.25</td>
<td>29</td>
<td>12.00</td>
<td>3.71</td>
<td>36</td>
<td>13.03</td>
<td>3.82</td>
<td>37</td>
<td>10.53</td>
<td>3.96</td>
<td>30</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>13.43</td>
<td>4.00</td>
<td>65</td>
<td>10.20</td>
<td>3.87</td>
<td>66</td>
<td>11.57</td>
<td>3.93</td>
<td>67</td>
<td>9.16</td>
<td>3.54</td>
<td>67</td>
</tr>
<tr>
<td>High</td>
<td>Original</td>
<td>17.26</td>
<td>4.23</td>
<td>46</td>
<td>10.59</td>
<td>3.01</td>
<td>44</td>
<td>14.36</td>
<td>2.35</td>
<td>45</td>
<td>12.00</td>
<td>3.17</td>
<td>44</td>
</tr>
<tr>
<td></td>
<td>Revised</td>
<td>20.09</td>
<td>2.84</td>
<td>43</td>
<td>15.48</td>
<td>2.86</td>
<td>42</td>
<td>16.59</td>
<td>3.09</td>
<td>44</td>
<td>14.54</td>
<td>3.37</td>
<td>46</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>18.63</td>
<td>3.88</td>
<td>89</td>
<td>12.98</td>
<td>3.81</td>
<td>86</td>
<td>15.46</td>
<td>2.95</td>
<td>89</td>
<td>13.30</td>
<td>3.50</td>
<td>90</td>
</tr>
<tr>
<td>Total</td>
<td>Original</td>
<td>15.00</td>
<td>4.60</td>
<td>82</td>
<td>9.55</td>
<td>3.18</td>
<td>74</td>
<td>12.52</td>
<td>3.56</td>
<td>75</td>
<td>10.20</td>
<td>3.56</td>
<td>81</td>
</tr>
<tr>
<td></td>
<td>Revised</td>
<td>18.07</td>
<td>4.25</td>
<td>72</td>
<td>13.87</td>
<td>3.69</td>
<td>78</td>
<td>14.96</td>
<td>3.86</td>
<td>81</td>
<td>12.96</td>
<td>4.09</td>
<td>76</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>16.44</td>
<td>4.69</td>
<td>154</td>
<td>11.77</td>
<td>4.07</td>
<td>152</td>
<td>13.79</td>
<td>3.90</td>
<td>156</td>
<td>11.54</td>
<td>4.06</td>
<td>157</td>
</tr>
</tbody>
</table>

Note: Low = grades 2 (sufficient) and 3 (good); High = grade 5 (excellent); Subscripts agr, set, hil and ind refer to the thematic units of agriculture, settlement, hills and industry, respectively.

Differences between low achievers' test-scores after reading the revised fragments and high achievers after reading the original fragments were calculated by means of the $t$-test for homogeneous and non-homogeneous (when necessary) samples. The Leven's test indicated that the variances of test-scores were homogeneous between the low achieving group reading the revised fragments and high achieving group reading the original fragments about agriculture ($F = 3.01, p > 0.05$), settlement ($F = 0.26, p > 0.05$), and industry ($F = 1.53, p > 0.05$), whereas the variances were non-homogeneous for the test-scores concerning the unit of hills ($F = 6.33, p < 0.05$). Except for the mean differences in test-scores (Table 4) referring to settlement, which suggested that the high achievers reading the original text scored significantly higher than their low-achieving class-mates reading the revised fragment ($t(73) = 2.18, p < 0.05, d = 0.53$, indicating a medium effect size), the differences between the high- and low achievers in geography were non-significant (agriculture: $t(72) = 1.76, p > 0.05, d = 0.42$; hills: $t(57) = 1.85, p > 0.05, d = 0.43$; industry: $t(78) = 1.88, p > 0.05, d = 0.43$).
Both low and high achievers in geography exhibited a significant advantage in their test-scores after reading the revised text fragments as compared to reading the original fragments.

For low achievers in geography, inequality of the variance between the groups reading the revised fragments and those reading the original fragments was revealed with respect to the thematic units of agriculture ($F = 6.14, p < 0.05$), and settlement ($F = 5.07, p < 0.05$), whereas the variances were homogeneous for the test-scores concerning industry ($F = 2.05, p > 0.05$), and hills ($F = 0.08, p > 0.05$). The results obtained by relevant versions of $t$-tests (for equal and unequal variances) showed a significant and consistent benefit in favor of students reading the revised fragments of the text (see also Table 4). The effect of reading the revised fragments ranged from moderate to substantial (indicated by the Cohen's $d$, representing differences in means of the two score-distributions displayed in standard deviations). With regard to the four thematic units, the advantage was moderate for agriculture ($t(50) = 2.91; p < 0.01, d = 0.75$) and large for the units of settlement ($t(52) = 3.08, p < 0.01, d = 0.82$), hills ($t(65) = 3.87, p < 0.001, d = 0.92$), and industry ($t(64) = 4.79, p < 0.001, d = 1.2$).

For the high achievers in geography, inequality of the variance between the groups reading the revised fragments and those reading the original fragments was suggested with respect to the thematic unit of settlement ($F = 5.92, p < 0.05$), whereas the variances were homogeneous for the test-scores concerning agriculture ($F = 0.02, p > 0.05$), hills ($F = 2.05, p > 0.05$), and industry ($F = 0.61, p > 0.05$). Significant favorable effects of reading the revised fragments of the text were also found in students who were assigned excellent grades in geography at the end of the previous school year (Table 4). For reading the fragments about agriculture and settlement, the effects were moderate in their magnitude ($t(88) = 3.69, p < 0.001, d = 0.78$) and ($t(79) = 3.72, p < 0.001; d = 0.79$), respectively, whereas the effects concerning hills ($t(87) = 3.85. p < 0.001, d = 0.82$) and industry ($t(84) = 7.72, p < 0.001, d = 1.68$) were large.

**Discussion**

In the present study, we aimed to linguistically improve four thematically different textual fragments selected from four geography textbooks (basic compulsory education, Grade 9) in order to increase their cognitive effectiveness; the textbooks under study were officially approved.
by the State Council of General Education as appropriate to be used by students in compulsory schools. The improvement (revision) of the textual fragments was focused on four interwoven dimensions, cohesion, argumentation, considerateness, and coherence. Effects of the assumed linguistic improvement were tested in a quasi-experiment with Slovene nine-graders. From the perspective of students’ comprehension of the text read, the results suggest a significant advantage of reading the revised fragments over reading the original ones even when controlling for the students’ background knowledge in geography (indicated by their final grade in geography at the end of the previous school year). The results further propose that our revision of the selected texts has a substantial effect on comprehension across different thematic fragments for both low- and high-achieving students in geography. Moreover, reading the revised fragments contributed to the students’ comprehension to such an extent that the low achievers attained levels of comprehension similar (or at least close) to levels of the high achievers (presumably possessing more background knowledge) reading the originals. The size of the effect of reading the revised textual fragments as compared to the originals was predominantly large though it varied somewhat by the thematic unit and the students' background knowledge in geography (final grades). Furthermore, the advantage of reading the revised fragments was the largest in case of reading the thematic fragment of industry in both the low- and high-achieving nine-graders. As shown by a semantic analysis of the original fragments, this fragment consisted of more gaps that are difficult to bridge by inference than the remaining three fragments (Justin, 2010a, b).

Based on careful analyses of original fragments in school textbooks and texts employed in international tests of literacy such as PISA (Justin, 2011) it seems that students' processes of inference, especially elaborative and bridging inferences (Garnham, 1994; Justin, 2010b, 2011) play a crucial role in their comprehension of written texts. In attempt to comprehend the text, a reader does not merely decode word meaning or sentence meaning but fills in the gaps in meaning by his/her representations retrieved from long-term memory and inferences. The reader completes the information given in the text explicitly by elaborative inferences (using knowledge about the topic to fill in additional details or to establish connections between what is being read and related items of knowledge). He/she also draws bridging inferences to bridge gaps in the text while constructing its meaning as all texts are semantically incomplete. Whenever the reader notices gaps in a text surface structure (observes that the text meaning is incomplete, i.e. not fully
expressed), this is a strong signal for him/her to make additional inferences. He/she tries to complete the meaning of sets of sentences, i.e. of the way they relate to each other, in a particular situation in which the sentences were used with a certain communicative intention of the writer. This reader’s completion by inferences contributes to coherent interpretation of the meaning which is necessary for the him/her to construct a model of the situation described in the text (Johnson-Laird, 1983; Van Dijk & Kintch, 1983), and has an important role in recognition of the writer’s communicative intention (Justin, 2011). Many of the bridging inferences appear self-evident and are thus not paid attention by writers (Garnham, 1994; Justin, 2011). But can students on a given level of cognitive development and by their knowledge recalled from long-term memory perform relevant bridging inferences and recognize the writer's communicative intention (an example of such inferences is given in the Introduction section of this paper)? If not (or at least not entirely), a student comprehends the text only partly (or even miscomprehends it). In revising the original textual fragments we thus, tried to make the students' processes of inference easier by: (i) filling in the gaps (identifying the gaps in the text that are difficult to bridge and conveying more explicit messages), (ii) conveying considerate information (eliminating ambiguous information, indirect referencing and abolishing concepts which students probably cannot relate to their background knowledge), (iii) increasing the cohesion of the text (by ordering the argumentation flow), and (iv) improving its coherence (by increasing unities of meaning, continuity, and logical accuracy of the text, accordant with syntactic rules).

The outcomes of our study showed that it is possible to create school textbook texts that are beyond the quality of those found in selected and officially valid Slovene school textbooks of geography. This can be achieved by performing linguistic procedures based on multi-disciplinary research findings and thoughtful revisions. We propose that considering the 'algorithms' used in our revision of the textual fragments would, in general, contribute to an increase in cognitive effectiveness (quality) of the extant (Slovene) school textbook texts. It is also important to note that a low level of cognitive effectiveness of school textbook texts not only hampers students' memory recall, comprehension and application of the information obtained but also puts a needless work-load on students, impedes their cognitive development and self-confidence, and decreases their motivation for reading and learning in a long run (Mikk, 2002).

Implications
An expert knowledge on interventions in the linguistic structure of a school textbook text, effects of these interventions on cognitive effectiveness of the text, and procedures which allow for concurrent empirical evaluation of preliminary developed parts of school textbooks with relatively small samples of students, has a special practical value for publishing companies creating school textbooks (Justin, 2012). In addition, the present study provides quality guidelines that could be used by evaluators of school textbooks and members of commissions who officially approve appropriateness of the textbooks for a given population of students in a given school course. Our findings and examples presented could be (in a somewhat 'naive reader-friendly' and simplified form) also helpful for school teachers when selecting among textbooks available on the market to be used by their students. Given that using cognitively effective (quality) school textbook texts with low-achieving students it is possible to attain a level of comprehension that is comparable to the level of high-achieving students reading lower quality texts, our findings are important for the development of quality of education (Justin, 2010b). Finally, the techniques and procedures employed in our study could be, with some adjustments, transformed into a tool for a large-scale evaluation and development of school textbooks (Justin et al., 2012).

References


Comparing Chinese and American Curriculum

and Instruction in Psychology

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Abstract

As China becomes a more international platform, studying abroad is becoming a common choice for Chinese students. Although business is the most popular major that Chinese students would choose abroad, a number of students are interested in psychology. For a good study experience, it is essential to understand the differences of curriculum and instruction between Chinese universities and American universities. In addition to language issues, Chinese students might encounter other problems when studying abroad. Chinese students are used to Chinese learning styles. When they study in a different academic environment, it is difficult for them to adapt their styles immediately. These situations add pressures to many Chinese students, which can result in learning difficulties. This article compares the two programs (one in America and one in China), to provide students information and suggestions so that they can make better choices and help them better prepare for future learning if they choose to study abroad.

*Key words*: curriculum, instruction, psychology, China, America
Comparing Chinese and American Curriculum
and Instruction in Psychology

General background

As China becomes a more international platform, studying abroad is becoming a common choice for Chinese students. America is China’s top pick to study abroad because of the high quality of education provided by American schools. “The US still takes the lead as the No. 1 country choice to study abroad for Chinese students. The percentage is 9.5 percent higher than that of the UK, the second most popular destination.” (Zhang, 2014, para. 7). Although psychology was born in Germany, it is a well-developed profession in America. America has excellent resources, mentors, and learning environments for individuals who want to learn psychology, which is why many Chinese students interested in psychology want to study there.

Differences in Chinese and American undergraduate psychology curriculum

This paper compares psychology-related curriculum at the Bachelor’s and Master’s level in Peking University in Beijing (PKU), which is widely considered the “Harvard of China” (US–CHINA, 2014), and the University of Mary Hardin-Baylor (UMHB), a small, private, Christian institution in Central Texas (Psychology Program Requirements, 2014).

Similarities

Both UMHB and PKU share many of the same core major courses in their undergraduate psychology programs: General Psychology, Statistics, Psychological Methods, Experimental Psychology, and Assessment and Evaluation (see Table 1, Undergraduate core course requirements in psychology). Table 2 (below) lists the courses that both universities require students to complete that are unrelated to their major. Both require English courses and physical education courses.
Differences

At PKU, students in different tracks are required to complete the same major core courses, whereas at UMHB there are some course differences for students in differing tracks. Additionally, PKU required more psychology courses overall and significantly more coursework in the biological area (see Table 1). UMHB offers both a Bachelor of Arts in Psychology and a Bachelor of Science in Psychology (Psychology Program Requirements, 2014), whereas PKU only provides Bachelor of Science in Psychology (Department of Psychology, 2014).

Table 1. Undergraduate core course requirements in psychology

<table>
<thead>
<tr>
<th>Courses</th>
<th>University of Mary Hardin-Baylor</th>
<th>PeKing University</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Regular track</td>
<td>Clinical track</td>
</tr>
<tr>
<td>General Psychology</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Statistics</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Psychological Methods</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>History &amp; Systems of Psychology</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Experimental Psychology</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Professions in Clinical Psychology</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Developmental Psychology</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Abnormal Psychology</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Psychology of Personality</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Social Psychology</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Assessment &amp; Evaluation</td>
<td>✓ Senior Evaluation</td>
<td></td>
</tr>
<tr>
<td>CNS Anatomy</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Biological Psychology</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Biology</td>
<td>Science is generally required as a non-major course in American universities</td>
<td>✓</td>
</tr>
<tr>
<td>Cognitive Psychology</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Abnormal Psychology</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Upper-level Electives</td>
<td>✓ (Three courses)</td>
<td></td>
</tr>
</tbody>
</table>
Because UMHB is a religious school, this institution requires courses like Bible study and Chapel (Table 2). In comparison, PKU requires several courses: the political theories and history of socialism and communism. Table 2 indicates that UMHB focuses more on cultivating students’ comprehensive abilities such as art, science, and public speaking, while PKU pays more attention to learning theories and math. Elective courses at PKU are all related to the student's major (psychology) such as education psychology, school psychology, psychology history, and child behavioral disorders.

Table 2. Bachelor’s degree general education courses

<table>
<thead>
<tr>
<th>Courses</th>
<th>University of Mary Hardin-Baylor</th>
<th>PeKing University</th>
</tr>
</thead>
<tbody>
<tr>
<td>Christian studies</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Chapel</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>English</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Exercise &amp; Sports Science</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Fine Arts</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Global Issues (includes history &amp; politics)</td>
<td>✓</td>
<td>✓ Military Theory, Socialism, Marxism Basic Principles, Chinese Modern History</td>
</tr>
<tr>
<td>Lab Science</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Public Speaking</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Quantitative Reasoning</td>
<td>✓</td>
<td>✓ Data Structure &amp; Algorithms</td>
</tr>
<tr>
<td>Scientific Inquiry or Natural Sciences</td>
<td>✓</td>
<td>✓ (Physics)</td>
</tr>
<tr>
<td>Social Sciences</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Freshman Seminar</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Philosophy</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Mathematics</td>
<td>✓</td>
<td>✓ (Two courses)</td>
</tr>
<tr>
<td>Ideological Cultivation &amp; Basics of Law</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Situation &amp; Policy</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Introduction to Computing</td>
<td>✓</td>
<td></td>
</tr>
</tbody>
</table>
Cultural expectations at the undergraduate level

Students in American undergraduate programs often are required to read textbooks and take quizzes over each chapter. They have many paper assignments, presentations, group discussions, and outside assignments such as interviews and observations. However, Chinese universities typically do not have rigorous requirements for undergraduate students and often do not require much homework. Chinese undergraduate educational programs rely more on final exams and a large thesis-type paper due before graduation.

Comparison of graduate level educational requirements

The larger psychological/helping professional field has split into several closely related professions in the United States: Counseling, Psychology, Social Work, and Marriage and Family Therapy - each with their own credentialing but all preparing graduates for related career positions (ACA, 2011; Lucas, 2009). State licensure varies by state in the U.S., but in all U.S. states, licensure requires a graduate-level training program with a supervised internship (ACA, 2011). In America, the master's level degree accounts for the majority of professionals practicing in the clinical helping fields today (ACA, 2011). Table 3 below demonstrates the variance in related graduate programs offered and the associated licensure (ACA, 2011).
Table 3. Common American graduate level training and associated licensure

<table>
<thead>
<tr>
<th>Educational Track, Major, or Specialty</th>
<th>Associated Independent Practice Licensure</th>
<th>Master's-level</th>
<th>Doctoral-level</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Licensed Professional Counselor (LPC)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clinical Mental Health Counseling¹</td>
<td></td>
<td>✔</td>
<td></td>
</tr>
<tr>
<td>Social Work</td>
<td></td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Marriage &amp; Family Therapy²</td>
<td></td>
<td>✔</td>
<td></td>
</tr>
<tr>
<td>Psychology³ (Masters-level)</td>
<td></td>
<td>✔</td>
<td></td>
</tr>
<tr>
<td>Psychology (Doctoral-level)</td>
<td></td>
<td></td>
<td>✔</td>
</tr>
<tr>
<td>Graduate Psychology degrees without an internship⁴</td>
<td>Leads to state certification by the Department of Education / School System</td>
<td></td>
<td>NA</td>
</tr>
<tr>
<td>School Counseling</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

|   | Licensed Clinical Social Worker (LCSW) |                |                |
|   | Licensed Marriage & Family Therapist (LMFT) |                |                |
|   | Licensed Psychologist                  |                |                |

¹This degree program is available at UMHB.
²This degree program is available at UMHB.
³This degree program is available at PKU.
⁴This includes majors such as: Cognition and Learning, Psychometrics, Developmental Psychology, etc.

In America, licensure for counselors is at the master's degree level while licensure for psychologists is at the doctoral level and generally allows psychologists to do more assessments (Lucas, 2009). The UMHB program focuses on training clinical practitioners requiring nearly three years to complete including a lengthy clinical training internship (Graduate Counseling Program Requirements, 2014). The Clinical Mental health Counseling graduate program at UMHB is a nationally accredited program in counseling which prepares graduates to sit for licensure for independent practice (Council for Accreditation of Counseling and Related Educational Programs [CACREP], 2009). All educational programs in Chinese universities are
accredited by Ministry of Education of the People’s Republic of China (The Ninth National People’s Congress, 1998). The PKU master’s level program focuses on training both practitioners and educators and requires 36 hours to complete including teaching practice. Additionally, PKU requires students to complete a dissertation before graduation. Then dissertation should be accepted for publication before defense (Department of Psychology, 2014). See Table 4 below for a comparison of the requirements for these two programs.

Table 4. Core requirements at the graduate level

<table>
<thead>
<tr>
<th>Coursework</th>
<th>UMHB Counseling</th>
<th>PKU Psychology</th>
</tr>
</thead>
<tbody>
<tr>
<td>Career Counseling</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Professional Orientation &amp; Ethics</td>
<td>✓ (Two courses)</td>
<td>Elective</td>
</tr>
<tr>
<td>Human Development</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Group Counseling</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Psychopathology</td>
<td>✓ (Two courses)</td>
<td></td>
</tr>
<tr>
<td>Theories of Counseling</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cultural Diversity</td>
<td>✓</td>
<td>Elective</td>
</tr>
<tr>
<td>Research &amp; Statistical Methods</td>
<td>✓</td>
<td>✓ (Two courses)</td>
</tr>
<tr>
<td>Trends in Psychological Research</td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Cognitive Neuroscience</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Applied &amp; skills courses</td>
<td>✓ (Two courses)</td>
<td></td>
</tr>
<tr>
<td>Trauma &amp; Crisis Counseling</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Substance Abuse &amp; Psychopharmacology</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Marriage &amp; Family Theories</td>
<td>✓</td>
<td>Elective</td>
</tr>
<tr>
<td>Assessment</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Elective(s)</td>
<td>✓ (One course)</td>
<td>(Seven courses)</td>
</tr>
<tr>
<td>Practice</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clinical Internship</td>
<td>✓ (Three semesters)</td>
<td>Elective</td>
</tr>
<tr>
<td>Teaching Internship</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Similarities**

At the graduate level, all compulsory courses are counseling/psychology related. Graduate level courses tend to be more skill-based than undergraduate program courses, and teach students how to use these skills in counseling or research (see Tables 1 and 4).
Differences

Similar to undergraduate level preparation, the PKU graduate psychology program required courses have more emphasis on science and research than the UMHB graduate program (see Tables 4 and 5). Tables 4 and 5 further illustrate that PKU has a larger number of elective courses whereas UMHB allows only one elective course at the graduate level (however several of the elective course areas of the PKU program are required at UMHB).

Table 5. Elective courses at the graduate level

<table>
<thead>
<tr>
<th>Choices for elective courses (not already listed above)</th>
<th>University of Mary Hardin-Baylor</th>
<th>PeKing University</th>
</tr>
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The UMHB coursework is less flexible due to strict standards set by the national accrediting body and Texas laws related to licensure (CACREP, 2009; Texas State Board of Professional Counselors, 2014).
Cultural expectations in graduate school

After graduating from a counseling program in America, most state laws require graduates to formally apply and pass a national licensure examination (American Counseling Association [ACA], 2011). Additionally, in most states, graduates are also required to complete 3,000 or more hours of counseling practice under the supervision of a fully-licensed professional (e.g., ACA, 2011). Most counseling programs in America do not require a thesis at the master's level, but American doctoral programs in counselor education and/or psychology generally do require a dissertation (Lucas, 2009). Historically, some American graduate programs required an oral exam; however in recent years most programs have moved to requiring a standardized licensure practice exam as a comprehensive exam to ensure graduates are adequately prepared to pass the compulsory licensure examinations (ACA, 2011).

The PKU master’s level program is in psychology (Department of Psychology, 2014). In China, most graduate level psychology programs have both oral and written exams, and students are required to complete a dissertation. Chinese graduate psychology programs generally focus on research and experimental assignments and dissertation requirements. Chinese master’s level psychology programs usually do not provide counseling training specifically. “China currently has a three-tier national licensing program that dates from 2002... [under] ...the auspices of the Central Department of Labor” (Lim, Lim, Michael, Cai, & Schock, 2010, p. 5). A licensed practitioner at level two or level three (level one is the highest) must complete a government-approve course and the pass the Department of Labor examination (Lim et al., 2010). However, “the highly coveted Level One License is reserved primarily for those who have Qualifying doctoral degrees in the fields of education, medicine, or counseling and have worked as a
therapist for at least 3 years” (Lim et al., p. 6). The PKU master’s level program is in psychology (Department of Psychology, 2014).

**Problems students might encounter when studying abroad and author’s suggestions**

**Language**

Language is most likely the biggest problem for most Chinese students. Psychology in American universities requires significant language skills for students, including English reading, writing, listening, and speaking. In graduate school, writing and speaking skills are more important because of many assignments relate to counseling skill acquisition, working in groups, or writing complex analysis papers. If Chinese students do not have adequate language skills, they will be required to take English language classes (ESOL—English for Speakers of other Language). Unfortunately, from my own experiences, these classes are not helpful to Chinese students. These classes are similar to English classes in Chinese schools.

It is better to work on spoken English before going to study in America. For extroverted students, they can make more connections with American students by hanging out with them and studying with them. This helps students integrate into American culture faster and allows them more opportunities to practice their verbal skills. For more introverted students, it can be far more challenging for them to interact with unfamiliar people. It can be quite painful for international students and lead to more isolation when they think American students are looking down on them when their English is not fluent or when they are not able to follow a conversation. This can be damaging to their self-esteem and potentially discourage further academic success. Sometimes international students will choose to spend more time being with other students from their home country rather than integrating with American students, which can further deter the improvement of their English communication skills. For those introverted
students, they may want to choose a more private way to practice their English skills, such as watching American TV series, movies, and record and transcribe class lectures. Compulsory assignments, like group discussions and presentations, force Chinese students to interact and may motivation them to practice more.

Psychology programs, especially at the graduate level, require that students finish multiple papers and essays, such as case studies, research reports, article critiques, and personal reflection papers. Sun (2013) asserted that writing in English can be difficult for Chinese students. “Among the many difficulties, errors from the influence of Chinese sentence patterns are the obscure ones that students cannot overcome easily” (Sun, 2013, p. 1298). To improve English writing skills, it is better for Chinese students to take writing classes and learn how to use school library databases to find resources for their papers.

**Learning styles**

Chinese and American education models and students’ learning styles differ significantly from each other. As described above in the comparison of curriculum, American education values more about students’ comprehensive abilities (including exposure to art and other cultural aspects), while besides Chinese and English, Chinese education tends to focus on scientifically-based academic learning (science, math, etc.). In Chinese high schools, major courses such as Chinese, Math, English, take up the majority of students’ study time. Chinese students’ high school life is very serious and stressful. Therefore, when Chinese students get to college, they spend more time doing what they think they missed in high school to compensate. Cutting classes, cheating in exams, and not listening to teachers in class are common behaviors in most Chinese colleges. Plus, Chinese students seldom ask questions. Most of them have already gotten used to following teachers’ instructions and Chinese teachers will tell them what to do. This
dominant learning model suppresses Chinese students' curiosities. For Chinese students to be successful in the American learning culture, they will need to learn to use their critical thinking abilities.

Chinese students should put more effort into reading textbooks because they usually have quizzes each week if they study in American universities. They also should actively participate in class activities, group studies, and presentations. These activities actually provide students with skills that enable them better adapt to the society when they graduate.

**Conclusion**

It is not easy to study in American universities, especially at the graduate level. Chinese students should better prepare themselves before going to study abroad. They also should consider whether study abroad or study in China would be more helpful to their individual career goals. This article does not intend to imply that Chinese education is poor, rather to point out the limitations of Chinese education when it is used as a foundation for further study in a different educational culture such as in America. Hopefully, as the number of Chinese students studying abroad continues to grow, the Chinese government will research these differences more and consider the need to make adjustments so that all Chinese students who want to study abroad will have adequate foundational experiences to ensure their academic and professional success.
References


Texas State Board of Professional Counselors (2014). *Apply for a new license – requirements* (paragraph 6). Retrieved from [https://www.dshs.state.tx.us/counselor/lpc_appy.shtm](https://www.dshs.state.tx.us/counselor/lpc_appy.shtm)


TTA Study

Research Abstract

**Title**  Test Taking Anxiety (TTA) among Baccalaureate Nursing Students

**Keywords**  Test anxiety, nursing, BSN program, academic achievement.

**Problem/Purpose**  Nursing students at Simmons College anecdotally report a high level of test-taking anxiety which they feel limits their ability to showcase their mastery of content on examinations. In order to obtain resources to develop additional supports for test-anxious students, a more rigorous, objective assessment of the prevalence of test taking anxiety is warranted. Additionally, it is important to establish a correlation between test-taking anxiety and academic performance. By establishing these baseline prevalence measures and associations, we will be able to evaluate the effectiveness of any future programs developed to address this issue.

**Literature Review**  Test taking anxiety (TTA) is well recognized to have 2 parts; physical symptoms referred to as the emotional component, and worry, referred to as cognitive test anxiety (CTA) which is considered to have the stronger association with academic performance (Earnest, 1990; Cassady & Johnson, 2002; Cassady, 2004; Cassady & Gordano, 2005,). The cognitive interferences among test-anxious students include comparing themselves to others, ruminating on the consequences of the failure, and feeling loss of confidence, loss of self-worth, unpreparedness, and excessive worry. These interferences have been shown to influence academic performance (Cassady & Johnson, 2002). Worry, or CTA, and the self-defeating thoughts it creates can lead to a reduction in self-confidence and impede the ability to complete a test (Sansgiry, Bhosle & Sail, 2006). CTA may influence a student’s performance not only during exams but also while studying for exams (Cassady & Johnson, 2002). Cognitive test anxiety (CTA) has been studied among college students in general, and psychology students most commonly, but very little has been written about the influence of CTA on academic performance among baccalaureate nursing students (Cassady & Johnson, 2002; Bembenutty, 2008). For baccalaureate nursing programs, CTA and poor test performance can translate into low retention rates and threaten the ability of programs to graduate students.
TTA Study

Three BSN nursing studies used the worry subscale of the TAI scale against GPA and found significant inverse correlations ranging in magnitude from $r = -0.19$ (Waltman, 1997) to $r = -0.516$ (Hilbert & Allen, 1985). When using the TAS scale against GPA, a similar magnitude ($r = -0.49$) of correlation was observed (Howell & Swanson, 1989). The magnitude of the influence of the worry subscale on GPA, although statistically significant, is quite modest accounting for only 4% of the total variance in test anxiety (Howell & Swanson, 1989). Another nursing study explored differences in exam grades by level of test anxiety and found no statistically significant differences between graduate nursing students scores on the general test anxiety (GTA) scale (Barnes, 1987) and their academic performance ranking (high, medium or low). Finally only one study examined the influence of TTA on NCLEX performance (Hilbert & Allen, 1985) and found a significant inverse linear association ($r = -0.35$) between the worry subscale of TAI and mean NCLEX score. In summary, the nursing literature on the relationship between TTA and academic performance is sparse and in many cases decades old. The purpose of the present pilot study was to describe the distribution of cognitive test anxiety scores and determine whether higher levels of anxiety were associated with poorer academic performance.

Research Questions

1. What is the distribution of cognitive test-taking anxiety (CTA) scores among baccalaureate nursing students at a private college in the northeast U.S.A?

2. Are higher levels of CTA associated with poorer academic performance?

3. Is a self-reported anxiety score (1-10) correlated with scores from the CTA instrument and is the association with academic performance the same?

Framework  A stressor produces the fight or flight reaction which can be used by the individual to mount a response. If the reaction is ineffective or maladaptive, the stressor is intolerable and hinders the Individual’s chances of overcoming the stressor. This maladaptation creates an internal shift in equilibrium leading to more stress (Edelman & Ficorelli, 2005).
TTA Study

Methodology  Quantitative, descriptive, survey study design. IRB approval attained from Simmons College.

Population: Undergraduate baccalaureate nursing students or graduate nursing students in the pre-licensure portion of the curriculum. Recruitment: Public flyers, nursing newsletter announcements and in class announcements of the study were made. Group recruitment sessions were targeted with a convenience sampling methodology to capture times between the largest target classes. Inclusion: all UG and pre-licensure graduate students were eligible. Exclusionary criteria included age<18, inability to read English. The sample size goal was 100 students. Setting. Private, female-only undergraduate and co-ed graduate college in the heart of the Longwood Medical Area, Boston, MA. Data collection: Utilizing the Cognitive Test Anxiety (CTA) scale, a 25-item scale specifically designed for the one-dimensional assessment of the cognitive component of test-taking anxiety. It is considered a valid and reliable tool, which has good discriminant validity and strong internal consistency. It generally takes 8-15 minutes to complete (Cassady and Johnson, 2001). Additionally, a demographic form captured age, program track and specific nursing course registration. Academic performance indicators included GPA, SAT (verbal and math) and nursing course exam grades during the fall 2013 semester. Family Educational Rights and Privacy Act (FERPA) releases were obtained from willing students to access these data.

Data Analysis  The data were analysed using SPSS version 21. The outcome measures included exam T-scores. Main predictor variable was CTA score used categorically (low, average, high) as well as continuously in regression models. CTA scores were categorized by tertiles (1st tertile= low levels of anxiety, 2nd tertile = medium levels of anxiety, 3rd tertile= highly anxious). Descriptive statistics including mean and standard deviation for CTA scores, exam T-scores, GPA and SAT scores, self-reported anxiety, and relative frequency of categorical variables were conducted. Spearman’s correlation coefficients were computed for the association between CTA score total and academic performance measures. Between group comparisons used the ANOVA F-test to compare academic
TTA Study

performance measures between the 3 CTA groups. Repeated measures analysis of variance with post hoc analyses evaluated whether there were group differences in performance on the four nursing course examinations during the semester based on the CTA grouping. Hierarchical linear regression was conducted to determine if there is any additional ability of CTA score to predict final exam grade after accounting for baseline intellectual ability (GPA) and initial course exam grade.

Results Among the 373 students invited to participate, 183 (49.1%) participated, the majority were traditional undergraduates (48.1%), white (79.7%) female (99.5%) with average age 24.3 (SD 6.6) with range from 18-54 years. Scores on the CTA scale ranged from 26-95 with a mean (standard deviation [SD]) of 56.6 (17.4). Tertile categories were created with cut points for lowest CTA at <46, average CTA at 46 to <63 and highest CTA at 63 or higher. There were 60-61 students in each of the ‘low’ ‘medium’ and ‘high’ anxiety groups. No statistically significant differences in CTA scores were observed between any of the program tracks, age categories, race or academic year in the nursing curriculum. The relationship for all academic measures is linear with lower academic performance noted among those with higher levels of CTA compared to those with lower levels of CTA. These differences were all statistically significant below the alpha=0.05 level for all academic outcomes except SAT scores and exam three. The differences in nursing exam T-scores between CTA groups were quite modest (3-5 T-score points) and driven by the difference in academic performance between high and low CTA groups. Fewer statistically significant differences were observed between the low and medium or the medium and high groups. CTA scores are a significant although modest predictor of academic performance accounting for about four percent of the variance in final exam grade. Baseline intellect denoted by overall GPA was a stronger predictor of final exam grade accounting for about eleven percent of the variability in final exam grade. In self-reported levels of anxiety during nursing exams students’ scores ranged from 2-10 (not anxious to very anxious) with a mean (SD) of 7.4 (1.7). No statistically significant differences in self-reported anxiety scores were observed between any of the program tracks, age categories, race or academic year in the nursing curriculum. Finally there were no
TTA Study

statistically significant associations between a self-reported measure of anxiety and academic performance as there was with the CTA scores.

Limitations T-scores for exam grades included multiple nursing courses over the semester. Further study using a set of students in one course over time or over several semesters may produce stronger results.

Conclusions Cognitive test anxiety is quite common among baccalaureate nursing students at Simmons College. There is a linear relationship among the academic variables i.e. students with lower levels of performance had higher levels of CTA but CTA scores account for only 4% of the variance in final exam grade. GPA was a stronger predictor of academic performance on final exam grades. These data will help support a proposal to offer a Test Taking Anxiety Intervention in addition to a Test Taking Skills Workshop to all interested nursing students. To make this more accessible to nursing students who may commute and be juggling school, family, church and other interests, utilizing on-line resources such as webinars or Tegrity (screen capture/audio software) embedded within the learning management system used by the college would address this gap.

Selected References


Examining Elementary Preservice Teacher Reading Instructional Knowledge Needed to Teach the Common Core State Standards

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Abstract:

Ever increasing attention has been placed on the importance of having knowledgeable teachers who can influence reading achievement in meaningful ways. Yet many international reports suggest that large numbers of children are not learning to read. How can we better prepare teachers with the necessary knowledge to teach reading using the newly adopted English Language Arts Common Core State Standards? The current study examined the reading content and pedagogical knowledge of elementary education preservice teachers (N = 87) from two teacher education programs. Program A required 5 reading methods courses and Program B required 2 methods courses. Findings indicate that the preservice teachers presented fairly robust levels of knowledge in the areas of phonological awareness, phonics, comprehension, and vocabulary. We found that preservice teachers reported higher scores on pedagogical knowledge than content knowledge, and that there were statistically significant differences in knowledge based on the program attended and the number of reading methods courses completed. Suggestions for increasing reading teacher content and pedagogical knowledge are provided.
1. Title of the submission. The use of an online social bookmarking tool for stimulating critical analysis and facilitating assessment as part of a university course on climate change

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6. Abstract.

   An important learning objective for a final year University course called "Living with Climate Change" was to engender critical analysis skills in the students around the issues of media representation of the science of climate change. To facilitate this, students were required to curate an eportfolio where they accumulated bookmarks using Livebinder and importantly add short descriptions and analyses of their content. They have to think critically about each site and articulate how the site has represented the science. As they look for and accumulate bookmarks, they develop an appreciation of good and bad sites, sites that misrepresent the issues or mislead the reader, sites that are clear or confusing and sites that are biased or balanced. The activity encourages critical analysis within a self-directed, self-motivated learning experience and encourages students to apply their subject-specific knowledge. It also encourages them to curate and evaluate the flood of information that is available online. It is also part of the coursework assessment. The students send the lecturer a link to their individual eportfolio via Blackboard. The lecturer then uses a set of pre-agreed criteria to assess the eportfolio online via Blackboard and to provide feedback. In a survey 79% of students found the eportfolio Livebinder exercise 'useful' and 'engaging' and 83% considered it an appropriate mode of assessment.
Development of Mechanism Learning Kits Using 3D-Printer

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Abstract
New mechanism learning kits comprising gears, links, etc. was developed. Using the kit, many kinds of mechanisms are assembled easily on a panel and students are able to make a mechanism which can move just as it was intended. Therefore, the kit improves the learning effect for mechanism, because each parts of the kit is designed using 3D-CAD that can be machined easily using 3D-printers. Furthermore, the parts can be molded in large quantities using resin. Therefore, the kit can be introduced to schools at a lower cost. In this paper, designs of the parts and assembling methods of the kit are explained in detail, and evaluations from the technical course teachers who oversee practice classes were carried out.

1. Introduction

The power transmission system and the mechanism to create various movement is one of the difficult field for teachers. The reason that instruction has difficult are the lack of experience for manufacturing with movement of the students, the lack of the school hour for industrial arts and the lack of the effective teaching materials. In recent studies for mechanism learning, mechanism of pendulum clock1), mechanical doll2) and pin gear3) are proposed. They are suitable for learning about the mechanism with a specific function, but are lacking in flexibility that assembles various mechanism that students considers. In addition, there are the commercial block teaching materials4)5) that assembling of various mechanism is possible, but they are not spread to schools very much.

Therefore in this study, an assembling mechanism learning kit, using which students touch various systems and can learn through training to produce a mechanical working mechanism, is developed.

2. Mechanism learning kit

2.1 Summary of mechanism learning kit

This kit is intended that a teacher assembles mechanism and exemplifies it and a student produces various mechanism by oneself. Thereby it is developed with considering about following points.

(1) Easy joining method of parts which is easy to understand a student intuitively.
(2) Size of the parts suitable for learning.
(3) Production method of parts possible at school.
(4) Use of cheap parts from market.
(5) Reduction of parts production cost.
(6) It being easy to combine it with the standard parts of the kit and the original parts which designed and produced at school.

Using this kit, occlusion of the spur gears, rack and pinion, link mechanism, cam mechanism, etc. are easily assembled. Furthermore, about the problems of backlash or the dead center can be learned through the experience.

2.2 Components of the kit

2.2.1 Panel

As a panel to install the parts, a standardized pegboard is used. Standard of the pegboard is 910x1830x4 mm, 8 mm
holes, 30 mm on center. It is cut this to appropriate size, for example 300x450 mm, for use.

About using the pegboard in this kit, there is the fault that flexibility of the assembling is limited by a hole position being fixed. However, it is easy that a user makes additional holes and raises flexibility as needed. On the other hand, there is the advantage that the learner attaches a gear without knowledge about the distance between the axle of the gear surely, and can operate it by setting up a gear suitable for the limited hole position. In addition, there is a problem of the durability that hole diameter of the pegboard gradually spreads by repeating assembly and disassembly of the parts, and the state of the fitting worsens a little. However, the pegboard is one of the materials suitable as the teaching materials because of enough accuracy of holes, easy to obtain, easy to cut into a free shape and reasonable price.

2.2.2 Spur gear

In this kit, power transmission with gears is mainly assembled. The power transmission mechanism using gears is precise and certain. A gear is a basic mechanism part used for various machines widely and is treated close so that the number of revolutions of gears becomes the numerical calculation for the student. In a class of industrial arts, there are many chances to use a gearbox for the shifting of the motor turn but the gears which are used in the gearbox are too small to learn the shape and the number of the teeth of the gear for students. Therefore in this kit, spur gears of module $m=3$ mm, teeth $z=10$ and 30, involute tooth are used as standard parts. Pitch diameter of these gears are 30 mm and 90 mm, therefore two kinds of these gears how can be engaged on the holes of the panel.

The gear of $z=10$ is shown in Fig.1. At the center of the gear there is a through hole of 4.2 mm diameter, and so the gear is assembled to a commercial Teflon spacer(outer diameter 8 mm, inner diameter 4.2 mm, length 10 mm) using M4 flat head screw and double nuts with a few gaps for smooth turn. A hole of 5.5 mm diameter and a pole of 5 mm diameter located at 7.5 mm from the center of the gear fit in each other when another part is stacked on the gear. Thickness of all parts are $t=6$ mm. Fig.2 shows the gear with the spacer or other parts.

2.2.3 Rack

Fig.3 shows a rack. Sliding pair is comprised by being attached to a panel through two Teflon spacers in a ditch of the part center, and it is possible for linear motion. A through hole at one end is provided in order to connected to other parts as a turning pair.
2.2.4 Link

Three types of link are shown in Fig. 4. 1 hole link and 3 holes link turn around alone by attaching a Teflon spacer to the φ 4.2 through hole in one end, and turning pair consists of them. Also, by putting a Teflon spacer through the hole of 8.5 mm diameter, plural links constitute a turning pair. On the other hand, a connecting rod is used to connect between links or is attached to the panel using the central hole of 4.2 mm diameter as a turning pair.

![Fig.4 Three types of link](image)

2.2.5 Slider

Fig. 5 shows a slider. A slider turn around by attaching a Teflon spacer to the φ 4.2 through hole in one end, or is used as a fixed part by letting the hole of a ditch and the panel penetrate in a Teflon spacer. The slider and the link are assembled as sliding pair through a Teflon spacer.

![Fig.5 Slider(t=6 mm)](image)

2.2.6 Cap for spacer

Fig. 6 shows a cap for spacer. The cap is put in the end face of the spacer. Turning pair or sliding pair are
constructed by assembling with links and sliders using the Teflon spacer. It prevents a part from falling on this occasion by putting an axis chief in the end face of the Teflon spacer, and being crowded.

![Cap for spacer](image1)

Fig.6 Cap for spacer

![Assembly structure](image2)

Fig. 7 Assembly structure

**2.2.7 Commercial parts**

Commercial parts which are used for assembling mechanisms on the kit are shown in Table 1. Spacers and Teflon washers are chosen and used depending on the situation appropriately.

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Table.1 Commercial parts

**2.3 Production method of the parts**

**2.3.1 Design and production with 3D-CAD and 3D printer**
In this study, Creo Elements/Direct Modeling Express 4.0 which is a free 3D-CAD software is used for design of the parts. For cutting and processing the parts, a cutting type 3D printer MDX-540 made by Roland DG is used.

For work material, polyacetal or acrylic resin is chosen. Polyacetal is engineering plastic superior in low friction and strength therefore it is suitable when it is cut and is just used as the parts. On the other hand, acrylic resin has high transparency, and are beautiful, and the material cost is cheap with about 1/3 of polyacetal, but impact resistance is insufficient, therefore it is not suitable a little to use it as mechanism parts. In this study, acrylic resin is used as a male model for resin molding.

### 2.3.2 Production by resin molding

At the present when a 3D printer is hardly introduced into a school, resin molding is proposed as a method to easily produce the parts of the kit in the school. A process of the resin molding is shown below.

1. Production of the male model using 3D printers
2. Production of the female model by pouring silicon into the male model
3. Production of the parts by pouring epoxy resin into the female model

In these process, (1) is difficult under present school conditions therefore some offer of the male model from the school outside is necessary for some kind of methods Process (2) and (3) are easy to do at school because they are the work that only pouring resin into a male model. The process that a part is produced by resin molding in fig. 8.

![Fig.8 Process of production by resin molding](image)

### 3. Practice class using the kit

The practice class using the kit was carried out at a junior high school in Japan. A learning problem "to think about the mechanism of the toy which worked" was set by the class and it was intended to cultivate ability to devise mechanism to realize the movement that a student wanted to make, and to create. In the class, one among four kinds of production problems to show in fig. 9 was assembled by students.

![Fig.9 Four kinds of production problems](image)
References

3) F. Ito, A Consideration of the Research Development of Department of Art and Domestic Education of Middle School III: Production of the Machinery Model for the Use of Conduction
Abstract

The presenters previously surveyed fully online students regarding their engagement in graduate online courses to find out what they said was the optimum learning environment as influenced by their instructors, classmates, and themselves.

Subsequently, the presenters have reviewed the categories of evaluative criteria on rubrics for the online discussion forums. Performance criteria, grouped into cognitive, mechanical, procedural/managerial, and interactive categories, have been analyzed to determine which ones are used in the rubrics for the program online discussion forums with the objective of mentoring the online students on performance criteria that the students need to know and be able to do in the online forum to achieve maximum success.

Each full-time faculty person has responsibility for each course that s/he develops. This includes the creation of rubrics for all assignments that are built into the particular course shell(s). Once a faculty member creates a rubric, it is reviewed by the members of the curriculum team for the SOE program that has oversight for the course. After the rubric has been approved, all full-time and adjunct faculty that teach the course are required to use that rubric for the specific assignment; rubrics are not supposed to be modified by anyone other than the course developer.

Rubrics are embedded in the online discussion forums for easy access by students. Instructions to the students specify that they are to use the rubrics as they craft their postings on the discussion forums. The reality is that the majority of the students do not use the rubrics until they have received their first week’s scored rubric for the forum that reflects a low assessment score. By that time, the negative experience creates a contentious relationship with the course instructor.

Specific challenges that we face in our distributed campus system are that, frequently, the course instructors do not use the rubrics when they grade the discussion forums. So, students who are taking the same course in a different section may have submitted comparable work but receive completely different rubric scores.

Keywords: faculty mentors, rubric scoring, online performance criteria, online discussion forums, interaction in online courses, evaluating online discussions
Abstract
Prior research in memory examined recollections of school. Aims: This study sought to extend earlier research concerning memories of school to preservice teachers. The participants were preservice teachers who were enrolled in an undergraduate Educational Psychology course. Based on prior research protocols, undergraduate teacher education majors were directed to recall memories about school subjects they planned to teach or those they did not plan to teach. Teacher-related recollections were more positive for the Plan To Teach subjects and more negative for the Plan Not To Teach subjects. This finding applied to both Elementary and Secondary preservice teachers who reported more pleasant memories for the subjects they Plan To Teach. More positive memories for Plan To Teach subjects were reported across the academic scoring categories of Teacher Behavior, Learning Experiences, and Recognition. Implications for the teaching of Educational Psychology were discussed.

*Keywords:* autobiographical memories, preservice teachers, teaching Educational Psychology, academic memories.
Preservice Teachers’ Academic Memories of School: A Tool for Learning

A major academic responsibility for Educational Psychology faculty on college and university campuses is to teach preservice teachers. This course typically occurs early in the preservice teachers’ program and is not always linked to a clinical experience. With limited experiences in school, it is likely that their own K-12 experiences would influence preservice teachers’ approaches to education in general and to instruction in particular. In fact, Hoy and Murphy (2001) addressed this as well “Given the timing of most educational psychology courses early in the prospective teachers’ college program, we [Hoy & Murphy] believe that the most valuable applications of knowledge from the course often are to the students’ current lives” (p. 167).

Introductory courses in Educational Psychology include concepts of learning and teaching. Common key themes include (1) Developmental Theories, (2) Student Differences and Diversity, (3) Learning and Motivation, (4) Classroom Strategies, and (5) Student Assessment. Do preservice teachers have positive and/or negative recollections related to these themes? Absolutely. For example, the memories of motivation and student learning are often vivid across the grades (K-12). Preservice teachers hope to be able to overcome the negative effects (e.g., punitive or hostile teacher behavior) and perpetuate the positive effects (e.g., nurturing and caring teacher behavior) that are resident in their memories of school. These memories are easily elicited in classroom discussions about motivation and learning, providing specific examples of the concepts.

School memories relate directly to one’s beliefs about education. It is highly likely that a preservice teacher would compare personal classroom experiences to the Educational Psychology content being taught. For example, if Jillian attended a parochial school, her
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memories of that experience may lead her to believe that a traditional setting is more conducive to learning. So the idea of teaching in an open classroom environment may have little appeal. Is it possible for Educational Psychology courses to incorporate the collective memories of preservice teachers into the classroom; to use them to guide instruction? The memories exist, and they influence beliefs about the learning environment. Hoy and Murphy (2001) suggested that “teachers’ beliefs influence their planning, instruction, and interactions with their students” (p. 163). The literature on beliefs and attitudes (Fishbein & Ajzen, 2010) notes a sequence of belief development that results in attitude formation, which ultimately influences behavior. The link between beliefs – attitudes – behavior is reflected by the following statement “Basically, we assume that human social behavior follows reasonably and often spontaneously from the information or beliefs people possess about the behavior under consideration” (Fishbein & Ajzen, 2010, p. 20). Our position is that memories can have an influence that is similar to that of beliefs. Edwards, Higley, Zeruth, and Murphy (2007) believe that teachers’ efficacy maybe attributed to their own experiences as students in school. Memories of prior experiences operate in ways similar to beliefs, thus influencing attitudes and, subsequently, behavior. The question is how can these memories and beliefs be used to enhance instruction in Educational Psychology?

One way of examining preservice teachers’ motivations to teach would be to elicit their autobiographical memories of their own school experiences. Autobiographical memories, as reported by college students, tend to emphasize social situations (Pillemer, Goldsmith, Panter, & White, 1988; Walls, Sperling, & Weber, 2001). Conway and Pleydell-Pearce (2000) noted that autobiographical memory is significant for the development of identity and the sense of self. According to Conway (2001), autobiographical memory “…is the knowledge base of the self…Autobiographical knowledge then functions to ground the self in memories of actual
experiences or remembered reality…” (p. 1377). An examination of this “remembered reality” has the potential to uncover events that have influenced personal learning experiences that impact the beliefs about classroom instruction.

Selective memories may lead to beliefs that, in turn, lead to attitudes. Eagly and Chaiken (1993) examined the attitude construct. Attitudes are formed based on cognitive, affective, and behavioral processes. Attitudes, thus, are correlated with thinking, feeling, and doing. Encountering thoughts and behaviors counter to one’s attitude may be treated as cognitive dissonance and be combated by seeking additional support for the attitude or disregarding the dissonant information. Resistance to attitude change may be manifested in the process of selective memory. Preservice teachers’ attitudes about instructional strategies, in general, and teaching a given subject matter, in particular, are strongly related to their memories of school. Thus, the prior K-12 experiences of preservice teachers may lead to the development of beliefs and subsequently to the formation of attitudes about teaching (Eagly & Chaiken, 1993).

How might attitudes about teaching and K-12 school memories held by preservice teachers be used in an Educational Psychology course? Encouraging those students to use their own memories of K-12 learning could constitute an excellent experience for them. Then, actually trying out creative speculations based on those memories would potentially result in highly memorable learning experiences. Building stronger connections between (a) preservice teachers’ memories of their schooling experiences and (b) their beliefs and attitudes about teaching, strengthens the scaffold for exemplary instructional accomplishment.

Few studies have examined college student recollections or memories of school. These reported studies did not occur in an Educational Psychology setting. Graduates of a women's college wrote descriptions of their first, second, third, and fourth "memories to come to mind" of
The two most common topics of the memories were housing (34%) and recreation/leisure (33%), with lesser recollection of academics (24%). University undergraduates wrote descriptions of their autobiographical memories of school in research conducted by Walls et al. (2001). Even though these college students were instructed that they could write about their school memories related to academics or social situations at school, the vast majority of the memories were "social" in nature. There was evidence of stronger memories of the more recent school years. Unpleasant event memories were most frequent in the early grades and decreased in proportion across the grade levels. A similar finding was also reported by Mather and Carstensen (2005).

Walls, Haught, and Nardi (2011) conducted an investigation to extend knowledge of academic recollections about school subjects. In Data-Set 1, undergraduates (N=195) were directed to recall memories about Language Arts, Social Studies, Math, Science, Physical Education, and Music/Art. In Data-Set 2, undergraduates (N=179) were asked to recall academic memories but were allowed to choose the school subjects. In Data-Set 1, the scoring categories of Positive and Negative Learning Experience were reported more frequently than Positive and Negative Teacher Behavior, Positive and Negative Interpersonal Experience, or Positive and Negative Recognition categories. In both data-sets, Math was the only content area where the Negative Learning Experience category was most often reported. Extremely pleasant recollections were frequently reported for all school subjects in both data-sets (Walls et al., 2011).

Research more directly focused on teaching and teachers has documented that preservice teachers hold strong beliefs based on their earlier classroom experiences (e.g., Hoy & Murphy, 2001; Pajares, 1992; Richardson, 2003; Wideen, Mayer-Smith, & Moon, 1998; Wubbels &
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Korthagen, 1990). Twelve preservice primary teachers were followed across the first year of an education program in northern England. They were (1) interviewed four times, (2) shown videos of contrasting teaching styles in math and a video of a lesson on creative writing, (3) asked to imagine teaching a lesson, and (4) required to develop a script for that lesson. Analyses of their “images” of teaching revealed that students held an image of good and negative teaching based upon one or two particular teachers from their past who stood out as role models. Their scripts of proposed lesson plans were frequently modeled after observed practice. “We know that student teachers do spend time imaging their classroom performance and that some students have quite powerful and influential images of teaching” (p. 8) that are derived from their own school experiences (Calderhead & Robson, 1991). If prior K-12 experiences influence their perceptions about teaching, how can Educational Psychology faculty use these experiences to improve learning? In the present investigation preservice teachers were asked to recall academic memories following the procedures employed by Walls et al. (2011). This was formulated to provide documentation of academic memories held by preservice teachers.

The current study is designed to answer the following research questions. Research Question 1: What content areas do education majors remember from their own K-12 academic experiences? Research Question 2: Do the participants write about more positive memories for the subjects that they Plan To Teach in contrast to the subjects they Plan Not To Teach? Research Question 3: Does intended Grade Level (elementary versus secondary) relate to Pleasantness when recalling memories for subjects that will be taught or subjects that will not be taught? Research Question 4: Do memories of subjects they Plan To Teach and subjects that they Plan Not To Teach differ across the four academic scoring categories of Teacher Behavior, Learning Experience, Interpersonal Experience, or Recognition? Research Question 5: Do
memories of intended Grade Level (elementary, middle, secondary, or art/music K-12) focus on the students or the subject/content area?

**Method**

**Participants**

The participants were 83 undergraduate education students at a mid-Atlantic public university. There were 16 men and 58 women (9 individuals did not report gender) enrolled in an introductory educational psychology course. They elected to participate in the study and received a small number of extra credit points. The first author was an instructor in one of the four sections of the course where these data were collected. Procedures were approved by the University’s Institutional Review Board for the Protection of Human Subjects. Participants were mostly Caucasian as is the current profile of this institution (86%) (Media Factual, http://www.collegefactual.com/colleges/.../student-life/diversity/, retrieved on 5/5/2014). Information about ethnicity and socioeconomic status (SES) was not reported by the participants and, thus, could not be examined through data analysis.

**Materials and Procedures**

Participants were asked to describe teaching episodes that were related to (a) two memories of subjects in grades 1 through 12 they Plan To Teach and (b) two memories of subjects in grades 1 through 12 they Plan Not To Teach. For each description of an academic event, they indicated (a) what school subject it was, (b) what grade level, (c) how well they remembered the event, and (d) how unpleasant or pleasant the event was. The positive-negative event component of the present study consisted of Academic Categories coded by the authors based on earlier protocols employed by Walls et al. (2011) that included (1) Positive Teacher Behavior, (2) Negative Teacher Behavior, (3) Positive Learning Experience, (4) Negative

The primary variables were school subject, grade level in school, memory intensity, and affect. School subject referred to Language Arts, Social Studies, Math, Science, Physical Education, and Music/Art. Grade level in school included grades 1 through 12. Memory intensity described how well the individual remembered the event (from 1 - Barely at All to 6 - Almost Perfectly). Affect referred to how negatively or positively the individual rated the event (from 1 - Extremely Unpleasant to 6 - Extremely Pleasant).

Participants responded to materials in a four-page packet. The information provided on the first page described the voluntary, anonymous nature of the study being conducted to “find out more about what people remember in relation to academic topics.” The second page asked for gender, major, and rank and provided the following instructions:

Describe four academic events that you remember that happened while at school. Academic events relate to a school subject matter such as Language Arts (Reading, English, Literature), Social Studies (History, Government, Geography), Math (Arithmetic, Algebra, Geometry), Science (General Science, Biology, Chemistry, Physics), Physical Education, and Music/Art. The event you describe for each subject matter should be the first one that occurs to you while filling out these pages. They can be from any grades (Grade 1 to Grade 12). Please tell the details of who was involved and what happened. After you write each description, circle the information asked for about that event. The first two memories will be based on a subject that you plan to teach. The last two memories will be based on a subject that you do NOT plan to teach.

Examples of events in Language Arts and Science were presented in rectangles (9 cm by 18 cm). These examples were handwritten to illustrate how a participant might respond to the prompts for the four academic event memories that followed. The Language Arts example was a scenario about doing a good job of reading in the first grade. The Science example was a scenario about an 11th grade physics teacher who demonstrated the concept of gravity by making
Pages three and four of the packet included a brief one-sentence direction for each of the four memories and a blank 9 cm by 18 cm rectangular response box (two per page) for the participant to write his/her academic memory. Two boxes were included on page three of the packet with the words “SUBJECT THAT YOU PLAN TO TEACH” included within each of the two boxes. Two boxes were included on page four of the packet with the words “SUBJECT THAT YOU DO NOT PLAN TO TEACH” included within each of the two boxes. Below each box, the participant was to indicate the school subject, the grade level (1 to 12), the memory intensity (1 to 6), and the affect (1 to 6) for the event described.

There were 316 memories written by the 83 participants. These memories were categorized by the authors using the Academic Categories developed in the study by Walls et al. (2011) to incorporate the primarily academic probes of their research. Thus, scoring procedures were based on the previously established coding rules. When the academic categorization of a particular recollection was unclear to a scorer, consultation between authors occurred (Walls et al., 2011).

We examined the academic memories of preservice teachers who were enrolled in an Educational Psychology course to see if their own K-12 classroom experiences (1) were related to the subject or content area in which they planned to teach, (2) yielded more positive memories for subjects they Plan To Teach, (3) were more pleasant depending on grade level for subjects they Plan To Teach or Plan Not To Teach, (4) were related to academic scoring categories, and (5) were focused on students or subject content.
Results and Discussion

The results are presented in terms of frequencies and content descriptions of the participants’ memories. The teaching episodes that they described were related to (a) two memories of subjects they Plan To Teach and (b) two memories of subjects they Plan Not To Teach. For each reported memory of an academic event, they indicated (a) what school subject it was, (b) what grade level, (c) how well they remembered the event, and (d) how unpleasant or pleasant the event was.

Research Question 1: What content areas do education majors remember from their own K-12 academic experiences? For the frequencies of subject matter memories written by the participants for Plan To Teach and Plan Not To Teach, the memories in subjects that they Plan To Teach were in Language Arts (n=43), Art/Music (n=38), Social Studies (n=31), Math (n=22), and Science (n=22). The memories in subjects they Plan Not To Teach were in Science (n=34), Language Arts (n=28), Social Studies (n=25), Math (n=24), Physical Education (n=20), and Art/Music (n=20). These totals exceed the number of participants because the participants were not restricted to just one subject. The findings related to Research Question 1 provide evidence of the breadth of memories that preservice teachers recall.

Research Question 2: Do the participants write about more positive memories for the subjects that they Plan To Teach in contrast to the subjects they Plan Not To Teach? Participants’ ratings of 5 and 6 on a 6-point scale were combined for Pleasant, and participants’ ratings of 1 and 2 were combined for Unpleasant. The percentages of Pleasant memories for the Plan To Teach category were higher (65%) than the Pleasant memories for the Plan Not To Teach category (47%). In contrast, the percentages of Unpleasant memories for the Plan Not To Teach category were higher (36%) than the Unpleasant memories for the Plan To Teach category.
A chi-square analysis for the cross tabulations for Pleasantness (High versus Low) and Teach Memories (Plan To Teach versus Plan Not To Teach) produced a statistically significant chi-square value ($\chi^2 = 16.17$, $df = 1$, $p < .01$) with more Pleasant memories for the Plan To Teach category.

Although most preservice teachers in the present investigation rated the memories of the Plan To Teach and the Plan Not To Teach subjects as being positive, the total number of reported Plan To Teach memories was substantially higher. This may be related to positivity bias. Mezulis, Abramson, Hyde, and Hankin (2004) reported that researchers have suggested the presence of a self-serving attributional bias, with people making more internal, stable, and global attributions for positive events than for negative events.

The present study examined preservice teachers’ memories about school subjects. These findings give rise to additional questions such as would their school memories become even more positive over time as reported by Walls et al. (2011) and noted by Mather and Carstensen (2005).

Examples of extremely pleasant classroom memories (with ratings of 6, Extremely Pleasant) are presented in the Appendix. These Plan To Teach memories include all school subjects except Physical Education. There were no participants indicating Physical Education as a subject that they planned to teach. Extremely Pleasant memories may be examined in an Educational Psychology class for common or reoccurring elements or themes (e.g., level of student engagement) to encourage preservice teachers as they contemplate their own lessons.

**Research Question 3**: Does intended Grade Level (elementary versus secondary) relate to Pleasantness when recalling memories for subjects that will be taught or subjects that will not
be taught? The grade levels were grouped in terms of Elementary (Grades K-4), Middle School (Grades 5-8), and High School (Grades 9-12). The majority of participants reported intending to teach at the Elementary level (n=35) or at the High School level (n=29). Fewer participants projected teaching at the Middle School level (n=7). There were 12 individuals whose grade levels for teaching were not included in this analysis (Special Education=2; information omitted=10). A chi-square analysis for the cross tabulations for Grade Level (Elementary versus Secondary) and Pleasantness (High versus Low) for the Plan To Teach Memories yielded a statistically significant chi-square value ($\chi^2 = 4.44, df = 1, p < .05$) with both Grade Levels having significantly higher positive recollections of the subjects that they Plan To Teach. In contrast a chi-square analysis for the cross tabulations for Grade Level (Elementary versus Secondary) and Pleasantness (High versus Low) for the Plan Not To Teach Memories was not significant ($\chi^2 = 0.004, df = 1, p > .05$). Since both elementary and secondary preservice teachers had more positive recollections for the subjects that they Plan To Teach, utilizing their recollections in subject-specific context would be helpful in Educational Psychology discussions.

**Research Question 4**: Do memories of subjects they Plan To Teach and subjects that they Plan Not To Teach differ across the four academic scoring categories of Teacher Behavior, Learning Experience, Interpersonal Experience, or Recognition? Four chi-square analyses were conducted to examine the Academic Categories that included (1) Positive and Negative Teacher Behavior, (2) Positive and Negative Learning Experience, (3) Positive and Negative Interpersonal Experience, and (4) Positive and Negative Recognition. A chi-square analysis for the cross tabulations for Teacher Behavior (Positive versus Negative) and Teach Memories (Plan To Teach versus Plan Not To Teach) yielded a statistically significant chi-square value ($\chi^2 = 3.88, df = 1, p < .05$) with more Positive Teacher Behavior memories reported for the Plan To
Teach subjects and more negative Teacher Behavior memories for the Plan Not To Teach subjects. The second chi-square analysis for the cross tabulations for Learning Experience (Positive versus Negative) and Teach Memories (Plan To Teach versus Plan Not To Teach) yielded a statistically significant chi-square value ($\chi^2 = 5.71, df = 1, p < .05$) with more Positive Learning Experience memories than Negative Learning Experience memories reported for the Plan To Teach subjects and for the Plan Not To Teach subjects. The third chi-square analysis for cross tabulations for Interpersonal Experience (Positive versus Negative) and Teach Memories (Plan To Teach versus Plan Not To Teach) did not produce a significant chi-square value ($\chi^2 = 2.40, df = 1, p > .05$). The fourth chi-square analysis for cross tabulations for Recognition (Positive versus Negative) and Teach Memories (Plan To Teach versus Plan Not To Teach) resulted in a statistically significant chi-square value ($\chi^2 = 6.46, df = 1, p < .01$) with more Positive than Negative Recognition memories recalled for the Plan To Teach subjects. Thus, these results indicated the Plan To Teach memories were more positive across the academic scoring categories of Teacher Behavior and Recognition. For the academic category of Learning Experience, more positive memories were reported for both the Plan To Teach and the Plan Not To Teach subjects. The differences observed for Interpersonal Experience were not statistically significant. All academic categories were used previously by Walls et al. (2011). These findings may provide direction for the types of memories to rely upon in Educational Psychology classrooms.

**Research Question 5:** Do memories of intended Grade Level (elementary, middle, secondary, or art/music K-12) focus on the students or the subject/content area? It is reasonable to expect clearer differences between the memories of the Plan To Teach and the Plan Not To Teach subjects because of the declared majors of the preservice teachers. An analysis to examine
whether Grade Level was related to Teach Memories (Plan To Teach versus Plan Not To Teach) in terms of content of shared memories (focus on student versus focus on subject matter) was conducted, but no clear patterns were found. The absence of clear differences in the content of the memories reported by secondary education majors is somewhat unexpected because they were preparing to teach one subject or content area (e.g., Science or Social Studies), and so they could easily note clear differences between those earlier experiences with the subject they Plan To Teach versus other subjects that they Plan Not To Teach.

It may be more difficult for elementary education majors to make these clear distinctions in memory content across Plan To Teach and Plan Not To Teach subjects since elementary teachers would ultimately teach four of the six listed subject areas including Language Arts, Social Studies, Math, and Science and may teach Physical Education (McKenzie et al., 2001) and Art/Music (Propst, 2003). Almost all memories were scored for a specific school subject. In a few instances, the participant noted that he or she engaged in a generic classroom activity such as “helped tutor a fellow student” but did not indicate the school subject. These findings, if replicated, might call into question traditional practice in Educational Psychology courses of grouping students by grade level of their teaching specializations.

Concluding Comments

To extend earlier studies where students predominantly reported memories of social situations and academic subjects (e.g., Pillemer, Picariello, Law, & Reichman, 1996; Walls et al., 2001), the current study explored the memories of preservice teachers about the subjects that they Plan To Teach or Plan Not To Teach. The pattern of findings in this study suggest that, overall, more Pleasant than Unpleasant memories were reported, even for Plan Not To Teach school subjects. Detailed memories were given for both Plan To Teach and Plan Not To Teach
events. Singer, Rexhaj, and Baddeley (2007) reported that college students “…show a strong tendency to tell memory narratives that provide detailed renderings of particular events” (p. 887). Participants in the present research described memories that were consistent with the reported school subjects. It is well documented that preservice teachers hold strong beliefs based on their earlier K-12 experiences (Buchmann, 1987; Calderhead & Robson, 1991; Florio-Ruane & Lensmire, 1990; Pajares, 1992; Wilson, 1990).

Recollections of various lessons that remain salient and positive with the passing of time might provide insights to teachers with varying levels of experience (e.g., preservice, first-year, established, veteran in the classroom). For example, what makes a science lesson dynamic, exciting, and memorable? Or, what kinds of lessons can be used to make math fun and positive? This information may be gleaned from the school memories of educators. The current study serves as an initial effort in learning about the impact of these early K-12 academic memories held by preservice teachers enrolled in an Educational Psychology course.

A survey of contemporary Educational Psychology textbooks (Snowman & McCown, 2012; Sternberg & Williams, 2010; Woolfolk, 2013) reveals that the topic of preservice teachers’ memories is rarely, if at all, addressed. However, beliefs are discussed in some of the texts in terms of how they relate to motivation to learn. Thus, in Educational Psychology courses, preservice teachers are taught that one's beliefs about personal learning can directly impact "if" and "how" learning occurs. Preservice teachers do consider their own school experiences through their own memories when they contemplate classroom performance and teaching (Calderhead & Robson, 1991). Memories provide the foundation on which preservice teachers base their perceptions of students and classroom learning. The current investigation examined preservice teachers' memories and found that preservice teachers hold positive memories about all subjects
including those that they plan not to teach. Those memories can serve as a tool used by Educational Psychology faculty for instruction about classroom practice, learning, and motivation through discussions, reflections, journal entries, and simulations. Having students in education foundation and methods courses recall their own school experiences and connect them to current course topics may be beneficial in helping students grasp and apply course content.
References


Appendix

Sampling of Extremely Pleasant (ratings of 6) Activities for Reported School Subjects

**Language Arts**

- In 1st grade the teacher played the piano before every reading lesson and we gathered around and read fun stories.

- In 9th grade we studied Romeo and Juliet. We read the play and watched a movie. Afterwards we completed a project (e.g., building a small scale model of the theater, designing costume, for the play, or writing a poem).

**Social Studies**

- In 4th grade we held a mock trial about a robbery at McDonalds to help us learn about the judicial system. I was the DA and won the case.

- In my social studies class in 8th grade, we were learning about George Washington. My teacher dressed up like him one day and acted like he was George. He taught our class from George’s point of view. He even used an accent. He stayed in character the entire time.

**Math**

- In 3rd grade I remember that we were learning our multiplication tables. My teacher had a big flower on the wall and a bunch of bees with our names on them. Each part of the flower represented a table (1s, 2s, 3s, etc.) and when we mastered one our bee would get put on that number. I was in a race with another girl to get my bee to the 10 first and I won. I learned my multiplication tables really well and really fast.
• In 9th grade geometry we learned about different shapes. We made scrapbook pages cutting our pictures into different shapes.

Science

• In sixth grade, my science teacher was doing a lesson on the parts of the cell. She started with a pan of Jell-O and put different fruits and candy in it to illustrate the different organelles. I think one thing that really makes it stand out was that she let us eat it later!

• In 5th grade, groups of four students constructed the solar system with materials of our choice. I worked with three of my best friends. We spent hours on this project, meeting several times at our various homes. We did our project with different types of candy and the entire class loved our idea.

Music/Art

• My General Music instructor in elementary school used creative games to teach the basic skills required to read music. He used tape to make a music staff on the floor. The students threw chalkboard erasers onto the staff, then named the notes where the erasers landed, each team was awarded points for correct answers. He also wrote music symbols such as rests, clefs, note shapes and time signatures on large cards. He turned them facedown and students tossed Koosh balls at them. Correctly naming the pictures earned points.

• In 1st grade art we made ceramic squares that would be part of a collage on the school wall. We fired them in a kiln and then painted them. Not everyone’s square ended up on the wall of the school so I was very proud that mine did.
Title of submission:
Attitudes Toward and Perceived Barriers to Participating in Adult Educational Activities in Montana.

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ABSTRACT

This study investigated the participation of small business managers in continuing education activities. The population for this study was small business managers who were members of the Montana State Chamber of Commerce (MSCOC). The 2013 membership of MSCOC consisted of a wide range of diverse members. The small business managers selected for participation in this study resided in varied geographical locations in the state, possessed various income levels, had varied educational backgrounds, had differing amounts of business experience, represented both genders, and were a wide variety of age. From the population of approximately 1200 a random sample of 200 small business managers was obtained from the 2013 membership roster. Forty one usable surveys were returned for a response rate of 20.5%. The data were collected with the Adult Attitudes toward Continuing Education Scale (AACES), the Deterrents to Participation Scale-General (DPS-G), and a demographic sheet. The data were organized to facilitate statistical analysis. A t-test was utilized to assess whether a statistically significant difference existed between the participants and nonparticipants in continuing education.

The study respondents had an average age of 52.2 years. Their ages ranged from 24 years to 80 years. Of this group 45% were males and 55% were females. The educational level of respondents ranged from 9 to 20 years with an average of 15.4 years. Their gross income ranged from $20,000 to $300,000 with an average of $116,444. Respondent’s years in business ranged from four years to 47 years with an average of 22.7 years. This group had participated in adult educational activities; the participation status of respondents revealed that 61% had participated while 39% had not participated.

The group varied in its perceived barriers to participation and its attitude towards adult and continuing education. On the DPS-G, which had a possible range of 34 to 170, the group’s average score was 70.97 and their scores ranged from 34 to 130. On the AACES which had a possible range of 22 to 110, the group’s average was 88.13 and their scores ranged from 56 to 110.
An analysis of the group means for the various variables indicated that participants and nonparticipants did not differ greatly on most of the variables. On all the variables the participant group scored higher than the nonparticipant group. On the AACES adult education participants scored an average of 91.42 and nonparticipants scored 82.92. On the DPS-G, participants scored an average of 71.78 and nonparticipants 69.67. The average of participants was 53 years and nonparticipants were 50 years. Participants had an average educational level of 15.68 years and nonparticipants had 15.08 years. The average gross income of participants was $130,278 and nonparticipant’s gross income was $88,778. Finally, participants have an average of 23.6 years’ experience and nonparticipants had 21.42 years. Although the participants group was consistently higher on these variables, the AACES total score and gross income were the only variables with sizeable mean differences between the groups. This difference was statistically significant at the .05 level on both the AACES total score and the gross income levels of small business participants and nonparticipants in adult and continuing education in Montana.

In conclusion, the study suggests that small business managers who have participated in adult and continuing education have more favorable attitudes toward continuing education. In addition, they tend to be older, better educated, have more business experience, and earn significantly more income.
Evidence-based Practices: School District Considerations in the Design of Professional Development for General and Special Educators

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Topic Area(s): Special Education; Curriculum, Research, and Development
**Description of Presentation**

Evidence-based practice standards have been present in the fields of medicine, psychology, and sociology for the past 20 years (Eddy, 2005). In education, there have been issues bridging the research-to-practice gap using evidence-based practices in special and general education settings (Cook & Odom, 2013; Gersten, Vaughn, Deschler, & Schiller, 1997). The dissemination, usage, adherence, sustainability, and fostering evidence-based practices via professional development at the district and state levels are a constant challenge (Cook, 2013; Klinger, Boardman, & McMaster, 2013).

The Council for Exceptional Children recently published the *Standards for Evidence-based Practices in Special Education* (Cook, Buysse, Klinger, Landrum, McWilliam, Tankersly, & Test, 2014). Currently, no data exists for researchers, practitioners, or teachers to determine which components of evidence-based practices are considered in how districts plan and design school-based professional development for general and special educators. This presentation describes a study conducted to provide empirical data on present school district considerations of the standards prescribed by CEC (2014).

**Abstract**

Using the *Standards for Evidence-based Practices in Special Education* prescribed by the Council for Exceptional Children, (Cook, et. al, 2014), a survey was created and distributed to 736 professional development coordinators in small, medium, and large school districts across the United States. This survey will determine which quality indicators and classifications of evidence-based practices were considered when planning school-based professional development.
for general and special educators. The results of this study will provide initial empirical data regarding which aspects of evidence-based practices are prevalent and important to school districts at the national level.
A Note on Modeling of Mathematical Competences

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ABSTRACT

In this paper, the authors present causal model of mathematical competences. This paper is a continuation of research on causal models that authors presented at international conferences in Albania (Tepeš, Lešin and Hrkač 2013) and the United Arab Emirates (Tepeš, Šimović and Tepeš 2014). Mathematical competences were grouped in three areas: language/data, geometry and arithmetic. Statistical set in our research consisted of 77 children from kindergarten in Zagreb, Croatia. We have 8 measuring variables for language/data competences, 5 measuring variables for geometry competences and 6 measuring variables for arithmetic competences. Three different models from our previous papers, for language/data, geometry and arithmetic competences, are now combined into a unified causal model of mathematical competences in kindergarten.

INTRODUCTION

In Croatia, kindergartens are pre-school education institution. Kindergarten teachers use curriculum for kindergarten (MZOS 2013) and additional curriculum (Economopoulos and Murray 2004, Kilman 2006). Teachers have to learn children mathematical competences. Mathematical competences are mathematical knowledge, skills and abilities. Mathematical competences in kindergarten can be divided in three group: language/data, geometry and arithmetic (Tepeš, Šimović and Tepeš 2014). Language/data competences are divided in natural language and data. Geometry competences are divided in space relations and geometric objects. Arithmetic competences are divided in numbers, relations and operations. Statistical set for our research was 77 children from Kindergarten “Milan Sachs” in Zagreb, Croatia (Kindergarten M. Sachs 2011). The structure of children’s age can be seen in Table 1.

Table 1. Children’s ages

<table>
<thead>
<tr>
<th>Children’s ages (months)</th>
<th>Number of children</th>
</tr>
</thead>
<tbody>
<tr>
<td>(65) – 70</td>
<td>27</td>
</tr>
<tr>
<td>70 – 75</td>
<td>15</td>
</tr>
<tr>
<td>75 – 80</td>
<td>21</td>
</tr>
<tr>
<td>80 – 85</td>
<td>14</td>
</tr>
<tr>
<td>Total</td>
<td>77</td>
</tr>
</tbody>
</table>

Testing of mathematical competences was performed as a part of an ordinary testing of development monitoring and children’s readiness for school. For testing language/data competences we used 8 different tests: telling the stories (DTEST), word analysis (DWOAN), word synthesis (DWOSI), hyphenation into syllables (DHYSY), color recognition (DRECO), distinguishing numbers and letters (DNULE), writing the name (DWRNA) and activity duration (ACTI). For testing geometry competences we used 5 different tests: relation in front of and behind (GIFBE), relation above and under (GABUN), relation left and right (GLERI), recognizing triangle (GTRIA) and recognizing rectangle (GRECT). For testing arithmetic competences we used 6 different tests: counting to 30 (ACO30), understanding the numbers to 10 (AUN10), knowing the number of fingers on both hands (ANFBH), adding + 1 (AAD+1), adding + 2 (AAD+2) and subtracting – 1 (ASU–1). Every test was evaluated with 1 if a child had a competence and 0 if a child had no competence. Those values are values of test or measurable variables. For example, in the telling the stories test (DTEST), a child was asked to retell what happened today. If a child knew how to retell the story he was evaluated with 1, and if a child did not know how to retell it he was

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evaluated with 0. Measurable variable DTEST has 77 values, obtained as a result of testing the children with 1 or 0.

In our last paper (Tepeš, Šimović and Tepeš 2014) we described three unrelated causal models for language/data, geometry and arithmetic of mathematical competences in kindergarten. We will now describe how they are connected into a single causal model of mathematical competences in kindergarten.

INITIAL CAUSAL MODEL OF MATHEMATICAL COMPETENCES

In causal model for language/data mathematical competences, three measuring variables are the cause of all other variables: hyphenation into syllables (DHYSI), telling the stories (DTEST) and distinguishing numbers and letters (DNULE). In causal model for geometry competences, one measuring variable is the cause of all other variables: relation above and under (GABUN). In causal model for arithmetic competences, three measuring variables are the cause of all other variables: counting to 30 (ACO30), knowing number of fingers on both hands (ANFBH) and understanding the numbers to 10 (AUN10). The main idea in our paper is to construct initial causal model that links three separate causal models of language/data, geometry and arithmetic. Initial causal model for competences is causal model with seven measuring variables that are the causes of other variables: hyphenation into syllables (DHYSI), telling the stories (DTEST), distinguishing numbers and letters (DNULE), relation above and under (GABUN), counting to 30 (ACO30), knowing number of fingers on both hands (ANFBH) and understanding the numbers to 10 (AUN10).

In the first step, we constructed Markov network or undirected graph (Whittaker 1989). The edges on undirected graph are defined by partial correlation coefficients. The edges connect two vertices or measuring variables. Connectedness is measured by the partial correlation coefficients \( \rho_{ij} \) of the vertices \( i \) and \( j \) knowing all other vertices \( \{i,j\} \). In our initial causal model, vertices are elements from the set \( V = \{ DHYSI, DTEST, DNULE, GABUN, ACO30, ANFBH, AUN10 \} \). Vertices \( i \) and \( j \) are elements in set of vertices or \( i, j \in V \). Partial correlation coefficients are shown in Table 2.

<table>
<thead>
<tr>
<th>( i \backslash j )</th>
<th>DHYSI</th>
<th>DTEST</th>
<th>DNULE</th>
<th>GABUN</th>
<th>ACO30</th>
<th>ANFBH</th>
<th>AUN10</th>
</tr>
</thead>
<tbody>
<tr>
<td>DHYSI</td>
<td>-</td>
<td>0.394</td>
<td>0.191</td>
<td>-0.107</td>
<td>0.193</td>
<td>0.042</td>
<td>0.038</td>
</tr>
<tr>
<td>DTEST</td>
<td>-</td>
<td>-0.058</td>
<td>-0.005</td>
<td>0.053</td>
<td>-0.055</td>
<td>0.053</td>
<td>0.020</td>
</tr>
<tr>
<td>DNULE</td>
<td>-</td>
<td>0.139</td>
<td>0.057</td>
<td>0.605</td>
<td>-0.061</td>
<td>0.124</td>
<td>0.128</td>
</tr>
<tr>
<td>GABUN</td>
<td>-</td>
<td>-</td>
<td>0.199</td>
<td>0.029</td>
<td>0.194</td>
<td>0.124</td>
<td>0.090</td>
</tr>
<tr>
<td>ACO30</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>ANFBH</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>AUN10</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

We marked (bold) partial correlation \( \rho_{ij} > 0.190 \). Undirected Markov graph has vertices from set \( V \) with edges with bold partial coefficient from Table 2. (Graph 1.)
In the second step, causal structure of mathematical competences is calculated by using Inductive Causation algorithm (Pearl 2000, Pellet & Ellisseff 2007). Causal structure is acyclic directed graph. IC algorithm searches for V–structures that have a special meaning in the causal structure. V–structure is sub graph \( i \rightarrow k \leftarrow j \) in undirected graph with \( \rho_{ij,k} > 0.90 \). Sub graph \( i \rightarrow k \rightarrow j \) in directed graph of causal structure of mathematical competences in the case of V–structure is \( i \rightarrow k \leftarrow j \). Our acyclic directed graph is completed with non V–structures \( i \rightarrow k \rightarrow j, i \leftarrow k \leftarrow j \rightarrow i \rightarrow k \leftarrow j \) for \( \rho_{ij,k} < 0.90 \) (Graph 2.).

In the third step, we calculate the causal initial model for the mathematical competences. In causal model, every directed edge is a causal connection connecting cause and effect of the cause (Tepeš, Šimović and Tepeš 2014). For example if we have edge \( i \rightarrow j \) from vertex \( i \) into vertex \( j \) or \( i \rightarrow j \), vertex \( i \) is the cause and vertex \( j \) is the effect of the case. Intensity of the cause is determined with coefficients in multiple regression formula. If measuring variable \( i \) is a cause, and measuring variable \( j \) effect, than multiple regression formula connecting cause and effect is \( j = BG + CC_i \). Coefficient \( BG \) means background competences, and coefficient \( CC \) means causal competences of cause \( i \) to \( j \). If two measuring variables \( i \) and \( j \) are the cause or \( i \rightarrow k \leftarrow j \), and measuring variable \( k \) is the effect, than multiple regression formula is \( k = BG + CC_1i + CC_2j \) with same interpretation of coefficients. Initial causal model is represented in Graph 3.
Initial causal model (Graph 3), connected together with the causal models for language / data, geometry and arithmetic (Tepeš, Šimović and Tepeš 2014), describes one causal model of mathematical competence in kindergarten.

**DISCUSSION**

In our previous models for language / data, geometry and arithmetic, we found greater background mathematical competence or knowledge. The background knowledge was greater than 0.60, and it meant that we had great causal influence of some latent non measured variables. Only in arithmetic causal model for relations that describe orientation in space we had background knowledge around 0.30. To the contrary, in our initial causal model we have background knowledge less than 0.15. It means that we must have more measure variables in language/data, geometry and arithmetic causal models. From our initial causal model (Graph 3.), the most important variables in mathematical competences in kindergarten are $DTEST$, $GABUN$, $ANFBH$ and $AUN10$. The measurable variable or competence telling the stories ($DTEST$) is very important to mathematical competences from the language and date point of view. The measurable variable or competence relation above and under ($GABUN$) is important to mathematical competences from the geometry point of view. The measurable variables or competences knowing number of fingers on both hands ($ANFBH$) and understanding the numbers to 10 ($AUN10$) are important to mathematical competences from the arithmetic point of view. For the purpose of further research, it is necessary to increase the number of children included and the children from other kindergartens. Test materials must be standardized and must allow for higher graduation of results. The study should include more measuring variables in data competences such as collecting data, measuring and information technology, in geometry competences such as lines, planes and simple bodies and in arithmetic competences such as complex arithmetic operation and simple arithmetic problems.

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Profiles in Objective Assessments of Japanese Reading Difficulty with the Operation Records on Japanese Text Presentation System

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ABSTRACT
There are many pupils with reading difficulty in Japanese schools. There is a method of objective assessments of the reading difficulty. We need to know the profiles of pupils for enabling the wide use of the objective assessment of reading difficulties. This paper discusses and proposes the profiles of reading difficulties of pupils in a Japanese elementary school. This paper describes the method of objective assessments of reading difficulty, and shows our experiments collecting the profiles of pupils. Then, we describe the profiles of pupils in the objective assessments of reading difficulties in a Japanese elementary school.

Keywords:: Profile, Reading behavior, Reading difficulty

1. INTRODUCTION
There are many pupils with reading difficulty in Japanese elementary schools. There are many difficulties. The big and first one is reading Japanese characters. Japanese characters are the construction of hiragana (phonetic character), katakana (another type of a phonetic character), kanji (Semantic character) and other characters.

There may be many causes of the difficulties on reading Japanese texts [1]. We do not discuss the causes. We only pay attentions to the methods for easing their difficulties. We call their difficulties “reading difficulty” in this paper.

The Japanese text presentation system was proposed and implemented to help the pupils with reading difficulties [2]. Figure 1 shows the display example of the Japanese text presentation system. In fig. 1, there are a normal presentation, a high-lighting part and masked parts. In this presentation,
a user can find the part reading. The system makes the precise record of the operations. With the operational record, we can assess the reading difficulties on objective base [3].

This paper proposes the objective assessment method of reading difficulties with the operational records of the Japanese text presentation system, and shows the profiles of pupils in a Japanese elementary school.

First, this paper proposes the assessment method using the system operational records. Then, we show some experimental assessments in a Japanese elementary school. And last, we conclude this work.

2. OBJECTIVE ASSESSMENT OF READING DIFFICULTY

With the Japanese text presentation system, the behavior of a user is recorded. From the recorded behavior, we can assess the reading difficulties about the user. This assessment is objective.

2.1 Operational record of the Japanese text presentation system

The Japanese text presentation system records all the operations of a user. The Japanese text presentation system moves the high-lighted part in a text with the key-input of the user.

Using the Japanese text presentation system, the user directs the move of the high-lighted part to the next word chunk with a key-input. The record includes the key operations with the precise time. With the record, we can measure the time for reading the high-lighted part. Table 1 shows the example of the operational record. The 1st and the 2nd columns have the date and time. The 3rd column is the operation. The 4th column includes the high-lighted part after the operation. They are Japanese. The 5th column does the elapsed time from starting the system in milli-seconds.

2.2 Assessment of reading difficulty

For assessing, we use the relation between the reading time and the length of the high-lighted word chunk. There is the number of characters and the number of phonemes for measuring the length of the text. In our pre-experiments, it shows clear relations between the reading time and the number of characters. We use the number of characters for measuring the length of a text. In Japanese texts, there are kanji, hiragana and etc. As a result, there is a change of phonemes in a character. However, the number of character shows better relation with the reading time.
Without reading difficulties, there is a linear relation between the reading time and the length of the high-lighted word chunk. However, in real reading, there are many miss-operations and reading difficulties. Figure 2 shows the relations between the lengths of the high-lighted parts and the reading times. Without outliers, there is a linear relation between the length and the time.

<table>
<thead>
<tr>
<th>Date</th>
<th>Time</th>
<th>Operation</th>
<th>High-lighted part</th>
<th>Elapsed time(mS)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013/7/4</td>
<td>15:42:42</td>
<td>RIGHT1</td>
<td>テレビや新聞では、</td>
<td>12593</td>
</tr>
<tr>
<td>2013/7/4</td>
<td>15:42:45</td>
<td>RIGHT1</td>
<td>天気予報が毎日伝えられています。</td>
<td>15375</td>
</tr>
<tr>
<td>2013/7/4</td>
<td>15:42:46</td>
<td>RIGHT1</td>
<td>この天気予報は、</td>
<td>17015</td>
</tr>
<tr>
<td>2013/7/4</td>
<td>15:42:49</td>
<td>RIGHT1</td>
<td>たくさんの資料にもとづいて、</td>
<td>19265</td>
</tr>
<tr>
<td>2013/7/4</td>
<td>15:42:52</td>
<td>RIGHT1</td>
<td>専門家が天気の変化を予測したもの。</td>
<td>22984</td>
</tr>
<tr>
<td>2013/7/4</td>
<td>15:42:54</td>
<td>RIGHT1</td>
<td>わたしたちは、</td>
<td>24250</td>
</tr>
<tr>
<td>2013/7/4</td>
<td>15:42:55</td>
<td>RIGHT1</td>
<td>天気予報を見て、</td>
<td>25765</td>
</tr>
<tr>
<td>2013/7/4</td>
<td>15:42:57</td>
<td>RIGHT1</td>
<td>明日の予定を立てたり、</td>
<td>27640</td>
</tr>
<tr>
<td>2013/7/4</td>
<td>15:43:00</td>
<td>RIGHT1</td>
<td>持ち物を</td>
<td>30281</td>
</tr>
<tr>
<td>2013/7/4</td>
<td>15:43:01</td>
<td>RIGHT1</td>
<td>用意したり</td>
<td>31250</td>
</tr>
<tr>
<td>2013/7/4</td>
<td>15:43:02</td>
<td>RIGHT1</td>
<td>して</td>
<td>33047</td>
</tr>
<tr>
<td>2013/7/4</td>
<td>15:44:26</td>
<td>LEFT3</td>
<td>います。</td>
<td>116797</td>
</tr>
</tbody>
</table>

Figure 2: Relation between reading time and the length.

### 3. EXPERIMENTAL RESULTS

Our experiments include 182 pupils. Their ages are from 7 to 12 years old. They read the materials fitting for their ages. Before the experiments, we make the performance evaluation about reading ability by the teachers. The evaluation is rough classification into 3 categories. The 3 categories are A, B and C. The category A is good as the reading ability. The B stands for the category that shows
a little reading difficulty. The C does for the category that shows an apparent reading difficulty. Some pupils show more reading difficulty. However, the pupils are not included in this experiment.

3.1 Valid data set

There are many difficulties about the experiments over the whole pupil in an elementary school. Some experiments have interventions and distortions. The pupil may have difficulties about operations of the Japanese text presentation system itself. Teachers make some mistakes about controlling the system. As a result, we have 103 valid data sets.

<table>
<thead>
<tr>
<th>School year</th>
<th>Reading performance</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>A</td>
<td>B</td>
</tr>
<tr>
<td>2</td>
<td>11</td>
<td>13</td>
</tr>
<tr>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>4</td>
<td>6</td>
<td>21</td>
</tr>
<tr>
<td>5</td>
<td>3</td>
<td>16</td>
</tr>
<tr>
<td>Total</td>
<td>24</td>
<td>55</td>
</tr>
</tbody>
</table>

Table 2 shows the precise distribution of the valid data sets. The normal pupils’ performances distribute in the grade ‘A’ and ‘B’. Of course, this distribution may differ among schools. However, at the elementary school, with the distribution, teachers grade normal pupils as ‘A’ or ‘B’.

3.2 Mean Reading speed of normal pupils

The most basic feature is the reading speed. We can define the reading speed with 2 methods. One is the number of phonemes per a second. The other is the number of characters per a second. At reading aloud, the number of phonemes may fit for utterances. The reading activity is the combination of looking a text, understanding letters, constructing words, understanding a sentence, and speak the sentence. The large parts of the process are understanding the text. In the parts, the understanding does not concern about the sounds of the letters. After understanding the sentence, the sounds of the letters are fixed. In the experiments, we observe more apparent linear relations between the number of letters and the reading time. We use the number of characters for measuring the reading speed in this work.

<table>
<thead>
<tr>
<th>School year</th>
<th>Reading performance</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>A</td>
<td>B</td>
</tr>
<tr>
<td>2</td>
<td>2.4</td>
<td>2.4</td>
</tr>
<tr>
<td>3</td>
<td>2.2</td>
<td>2.9</td>
</tr>
<tr>
<td>4</td>
<td>2.1</td>
<td>2.9</td>
</tr>
<tr>
<td>5</td>
<td>2.0</td>
<td>2.4</td>
</tr>
<tr>
<td>Total</td>
<td>2.2</td>
<td>2.6</td>
</tr>
</tbody>
</table>
Table 3 shows the average of the reading speeds. The values are the average number of letters in a second. This included the time for operations and waiting. However, these reading speeds carry some information about reading behaviors of pupils.

First, the reading speeds do not change between years. The absolute reading abilities increase with the years. However, the texts for the year also increase their complexities and difficulties. The ratio of kanji characters increases. A kanji character has more phonemes than a hiragana character. As a result, the reading speeds in the number of letters do not change much.

Second, the reading speeds do not change among the pupils’ reading performances. In reading silently, the reading speed may increase with the increase of the reading performances. However, in reading aloud, good reading is not fast. Pupils with bad performance need much time for understanding the text. The pupils with reading difficulties cannot read fast. The good reading aloud for teachers is not too fast. It is proper speed. The normal pupil can read fast and does not read fast. The pupils with B of reading performance read faster than the pupils with A.

3.3 Standard distributions of reading speed of normal pupils

The next feature of the reading speed is the standard distribution. Table 4 shows the standard derivations of reading speeds. In the following, we describe the standard derivation as STD. In the year 5, the STD of reading speed of the pupils graded ‘A’ is smallest in all. The pupil with the grade ‘A’ read texts in steady pace. The pupils with other grades cannot keep the steady pace. In total, the difference is not large. However, the STD of one with the grade ‘A’ decreases with the increasing of the ages.

The pupils with the grade B do not show a clear decrease of the STD of the reading speed with the increase of the ages. They have a little difficulty in reading texts. As a result, they pause sometimes.

<table>
<thead>
<tr>
<th>School year</th>
<th>Reading performance</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>A</td>
<td>B</td>
</tr>
<tr>
<td>2</td>
<td>2.2</td>
<td>2.1</td>
</tr>
<tr>
<td>3</td>
<td>2.0</td>
<td>2.4</td>
</tr>
<tr>
<td>4</td>
<td>1.9</td>
<td>2.7</td>
</tr>
<tr>
<td>5</td>
<td>1.6</td>
<td>2.0</td>
</tr>
<tr>
<td>Total</td>
<td>1.9</td>
<td>2.3</td>
</tr>
</tbody>
</table>

4. CONCLUSION

This paper shows the method of the objective assessments using the Japanese text presentation system. It discusses the profile of objective assessments of reading behaviors of the pupils in a Japanese elementary school. The profiles of pupils help to distinguish the pupils with reading difficulties from normal pupils. In the profiles, normal pupils read Japanese texts aloud smoothly.
We can measure the smoothness with the average and the standard derivation of reading speeds. The standard derivation is more important for measuring the reading difficulties.

We will make the system that enables to make day by day automatic assessments of reading difficulty. This helps many pupils with reading difficulty and the teachers that lead the pupils.

ACKNOWLEDGMENT

This work is supported with JSPS 25330405.

References


Title:
The Effect of the “Art Program Based on Esthetic Elements Found in Nature” on Young Children

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Abstract

The aims of the “Art Program Based on Esthetic Elements Found in Nature” (APEEN) are to explore nature in depth, appreciate its beauty, increase emotional sensitivity and esthetic attitudes towards it, and develop creative expressive abilities of young children.

The contents of the art program consist of five elements: line, color, shape, texture, and space. Each element includes three areas: exploration, expression, and appreciation. Communicating with nature as well as recognizing its characteristics and values are also involved. Teaching-learning processing of the APEEN had four steps: perception,
observation, expression and appreciation. Teaching strategies include questioning, explaining, modeling, cooperative learning, communicating, and feedback. For teaching-learning materials, exploring and appreciation materials and expressive materials are provided. Materials for exploration and appreciation include real objects from nature, as well as visual media of nature such as picture books, photos, and pictures. Materials for expression include collected natural objects and general art supplies and tools.

The purpose of the study was to investigate the effect on five-year-old children’s art appreciation ability, art representation ability, and nature-friendly attitude after participating in the APEEN for young children. The following questions were developed to guide the study:

1. How does APEEN affect developing children’s appreciation of art?
2. How does APEEN affect developing children’s representation of art?
3. How does APEEN affect developing children’s nature-friendly attitude?

A total of fifty five-year-old children participated in this study for twelve weeks. The APEEN was provided to the experimental group, while general art activities for kindergarteners were provided to the control group. To examine effectiveness of the program, a pretest and posttest on children’s appreciation and representation abilities of art, and nature-friendly attitude were conducted. Post-hoc test (SPSS) was used to analyze data.

The results were as follows. First, an average score of the sub-elements of young children’s ‘appreciation ability of art’ was significantly higher in the experimental group than in the control group. Observation and description (t =6.76, p < .001), materials and techniques (t =5.73, p < .001), artists’ intention (t =8.19, p < .001), atmosphere of a work (t =7.35, p < .001), artistic elements (t =8.13, p < .001), attitudes towards a work (t =2.67, p < .001). Therefore, APEEN showed a positive impact on increasing children’s ability for art appreciation.

Second, an average score of sub-elements of ‘representation ability of art’ was higher in the experimental group than the control group: there were significant differences in emergence of line and shape (t =6.18, p < .001), variety of colors (t =6.00, p < .001), detailed description (t =6.23, p < .001), balanced-symbol pace (t =7.71, p < .001), variety of shapes (t =5.42, p < .001), relevance to main theme (t =6.42, p < .001), originality of
symbol (t =6.07, p < .001), perfection of drawing (t =7.69, p < .001), and connectivity of symbol and language (t =7.70, p < .001). Thus, APEEN showed a positive effect to encourage children’s representation ability of art.

Third, an average score of the sub-elements of young children’s ‘nature-friendly attitude’ was higher in the experimental group than the control group: affection to animals and plants (t =4.76, p < .001), respect for life (t =3.47, p < .001), preference for nature to artificial environment (t =3.70, p < .001). Therefore, APEEN influenced positively to enhance children’s nature-friendly attitude.

The findings of this study clarify that the “Art Program Based on Esthetic Elements Found in Nature” for young children has a positive impact on children’s art appreciation ability, children’s art representation ability, and children’s nature-friendly attitude. The APEEN encourages young children to recognize the characteristics and values of nature, represent the beauty of nature creatively, and shape nature-friendly attitude by communicating with it. This reflects that the APEEN is feasible to apply in the educational fields for young children.
1. Title of the submission.
Lesson assistance system with target setting and supplementary lesson functions for motivating absentee student.

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6. Abstract and/or full paper.
Full paper.
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Lesson assistance system with target setting and supplementary lesson functions for motivating absentee student.

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Abstract Earlier research investigated suitable extrinsic and intrinsic motivation by using a target setup function and an evaluation teaching function in a lesson assistance system and clearly showed that the action of participating students who do not use the system positively resulted in low improvement. In an experiment in this research, supplementary lessons were given to an absentee student who was not able to attend a lesson for an unavoidable reason, and a function aimed at raising the absentee's learning motivation was included. The absentee student performed supplementary lessons outside of school hours with a PC. Because the course content at the time of the absence was reflected in test results, the learning motivation for the lesson improved. Furthermore, the target setup function had a synergistic effect with the supplementary lesson learning function.

Keyword: lesson assistance system, intrinsic and extrinsic motivation, educational support, target setup, evaluation instruction, supplementary lesson

1. Introduction
1.1 Background
Nakayama and Matsuda (2004) developed a lesson assistance system that enables effective individual correspondence through a simultaneous lesson to students with different levels of understanding. It was shown clearly that the student who understands course content is provided with more study opportunities, and scores become higher because all the students understand the course content. Even if the system shows that a student received suitable advice, it also became clear that the student who does not use the system positively cannot fully utilize its functions. Abdusalam (2009) demonstrated that the volition of a student who does not use the system positively could still show improvement due to extrinsic and intrinsic motivation by setting up a target with an evaluation from the beginning of a lesson. Specifically, a teacher using the system could provide a scholastic evaluation through the target setup at the beginning of a lesson. The lesson assistance system motivates students by comparing one's desired target value and actual achievement value, as well as one's actual achievement value and another's actual achievement value. Such motivation makes it possible to shift to intrinsic motivation. In addition, it is thought that the learning assistance system is appropriate for the attention-relevance-confidence-satisfaction (ARCS) model (Keller, 1983, 1984, 1987) to increase motivation by checking the motivation at the beginning of a lecture and checking the achievement at each subsequent lecture. However, when a student is not able to attend a lecture for unavoidable reasons, it becomes necessary to perform supplementary lessons by distance education. It is also necessary to examine how the supplementary lesson is reflected in the achievement ratio for that time of absence, and how motivation is maintained. Here, the study case of supplementary lessons is described. Taniguchi (2009) reported a PowerPoint lesson on the Web as an example of supplementary lessons. Specifically, Web teaching materials are placed on the Web so that a student is able to see these materials after a lesson. Then, it is possible to check the record of studying and the amount of usage, and to analyze the effect on the final examination. As a result, it was reported that the rate at which a one-time absentee has supplementary lessons is higher than the rate of a student who was absent three or more times.
Moreover, it was reported that the quiz results may become better by participating in supplementary lessons. However, although the learning effect of seeing a lesson after a class and the learning effect of supplementary lesson materials were clarified in these previous studies, the technique of raising a student's learning motivation has not been clarified.

1.2 Purpose
This research proposes and evaluates a supplementary lesson learning function aimed at increasing the learning motivation of the student who cannot attend a lecture for unavoidable reasons. A target setup function is included in the system (Abdusalam, 2009).

Adding a supplementary lesson learning function contributes to the ARCS model (Keller, 1983, 1984, 1987). Fig. 1 is a diagram for improving the learning motivation of an absentee student.

![Diagram](image)

**Fig. 1: Conceptual diagram of increasing intrinsic motivation from extrinsic motivation**

2 System Outline
2.1 Features and Composition of System
The stage at which a student works with the learning assistance system is divided roughly into three functions: "target setup" (Abdusalam, 2009), "attendance check and quiz" at each lesson, and "supplementary lessons provided to absentee student". In the "target setup", attendance is taken during a lesson. The target setup is carried out for the comprehensive target, which includes the percentage of attendance, quiz achievement ratio, the results of a midterm and a final exam, and an evaluation of how many performance goals were achieved for every content of each lesson. The function that performs the target setup (called the target setup function) is prepared. "Attendance check and quiz" compares the comprehensive achievement ratio with the achievement ratio for each course content. The comprehensive achievement ratio includes the percentage of attendance and the quiz achievement ratio collected for every lesson, and the results of the midterm and the final test. The function that shows the achievement ratio of each lesson (called the evaluation instruction function) is prepared in the lesson assistance system. In "supplementary lessons provided to absentee student", the contents of each lecture are displayed. The contents of a lecture at the time of the student's absence are shown, and this part is reflected in the test and quiz results of every lecture. The function to show the course content at the time of an absence (called the supplementary lesson function) is prepared in the system. Specifically, it is thought that supplementary lessons maintain learning motivation and make it possible to understand the course content during the absence. The motivation of a lesson is maintained or improved by reflecting the student attendance at the time of the absence and the results of a quiz given to the attendees. The above three functions are the features of this system. In addition, an attendance registration function, a quiz function, an attendance registration and quiz check function, the top ten results of attendance and quizzes also constitute this system as a whole. This system carries out lesson support for a teacher on a PC, and the absentee student receives a lesson by a mobile phone or a smart phone.

2.2 Outline and Application of Each Function
Fig. 2: Outline and application of the system

The outline of this system and the procedure for its application are shown in Fig. 2. Explanations are given below according to the numbers shown ((1) to (12)) in the figure. The three functions are the information input function, lesson support function, and supplementary lesson learning function.

2.2.1 Information Input Function

(1) The teacher draws up a syllabus before a lesson and prepares the teaching materials.
(2) The information input required for the teacher is given in advance. This system performs a setup of the school registration number and the student’s individual password, which are used as the input ID of the student who is a participant.

2.2.2 Lesson Support Functions

(3) At the start of the first lesson, the teacher orally gives explanations and directions of the application method of the lesson assistance system. If a student accesses the system by a mobile phone, the main menu (Fig. 3) of this system is displayed. When a student is absent for an unavoidable reason, a supplementary lesson learning function explains that it can have supplementary lessons on the course content. An explanation about the attendance or the score of a quiz is also given.

(4) The student chooses a goal setting function (Fig. 4) from the main menu (Fig. 3) and sets up the desired target value of the lesson. This function has the following three set points (Fig. 4: Target setting function, Achievement target of score, Achievement target according to context of study).
(4) After setting up the above (Fig. 4), based on the total result of the desired target value, the teacher can learn the outline of the student's desired target value and a student's motivation.

(5) The student performs attendance registration by entering a “lesson password” and the “attendance registration function” (Fig. 3).

(5) The teacher checks the attendance after the registration of attendance.

(6) The teacher gives a quiz and presents the quiz problems with a document camera or printed matter.

(6) The quiz is multiple choice (four choices), and it is possible to answer two times. A correct answer at the first attempt is assigned 1 point, 0.7 point at the second attempt, and 0 point at the third or more attempt.

(7) The student transmits the results of the quiz. Then, the school registration number and the student's individual password are using the date, test, attendance, and supplementary lesson function (Fig. 5), and the results of the quiz are checked. At the same time, it is possible to check the attendance registration of each lesson or supplementary lesson.

(7) From the total result of the quizzes transmitted by the system, the teacher checks the student's achievement and makes the judgment regarding the lesson advance.

(8) The teacher gives the evaluation instruction by the evaluation instruction function (Fig. 6) to the student based on the total result of the quizzes of (7).
(8)' The student performs a self-evaluation by the evaluation instruction function. The evaluation instruction function is divided generally into two types of information: results achievement information and achievement information classified by the contents of study. Section 2.2.4 describes the calculation technique of these two information types in detail.

(9) The teacher performs the directions required for the student, and advice is presented orally based on the information of (7)'.

(9)' The student changes the desired target value through the advice about the contents and the teacher's evaluation instruction, if needed.

2.2.3 Supplementary Lesson Learning Function

(10) The teacher judges whether distance education is required for the student, and requests that the student carry out the supplementary lesson learning function based on the information in (5)' (Fig. 7 and Fig. 8).

(11) The student absent from the lesson uses the supplementary lesson learning function by distance education on a PC (Fig. 9). In the supplementary lesson learning function, the data and the course contents of each lecture can be displayed (Fig. 10). The point of student reflects the results after self-study with the supplementary lesson learning materials. In addition, the number of attempts to use the supplementary lesson learning function was restricted to three. The reasons for limiting the number of attempts to three are as follows: participation in the lesson is the objective, and supplementary lesson study is aimed at assistance in the case of unavoidable absence. Moreover, in the questionnaires from students, the number of attempts considered to be the most suitable was three.
(11) The student takes a quiz, as in (6), based on the information shown by the supplementary lesson learning function. However, the points assigned were 0.7 if the quiz using the supplementary lesson learning function was correctly answered on the first attempt, 0.5 point on the second attempt, and 0 point at the third or higher attempt. This difference was based on the result of an investigation on the attempt with the most motivation, as given in the questionnaires from students (Fig. 11).

(12) The student transmits the result after the quiz, as in (7). Then, the school registration number and then the student's individual password are entered using the date, test, attendance, and supplementary lesson function (Fig. 5), and this function checks the result of the quiz.

(12) From the total results of quizzes transmitted by the system, the teacher checks the achievement of the student's distance education and makes the judgment required for lesson advance.
2.2.4 Calculation Technique of Results Information

Motivation is determined by checking the following information for each lesson. First, the results of the achievement information consists of three of them (“a quiz target and a quiz achievement ratio”, “an attendance target and the percentage of attendance”, and also “the comprehensive target and comprehensive achievement ratio”). In addition, although these three target values are set by the students themselves, the three achievement ratios are calculated automatically by the computer. Moreover, information of the absentee student and other students is included for the above six target values (total of 12 kinds (Fig. 6)). The comprehensive achievement ratio (R) in this experimental lesson is calculated as the sum of five target values. The percentage of attendance (S) and the quiz achievement ratio (T) are 10% each, and a midterm exam (CK1) and a final test (CK2) are 40% each. Furthermore, when the supplementary lesson learning function, described by (11)' of 2.2.3 is followed, weight (H) are used.

The calculation is as follows (Fig. 11).

\[
R(\%) = S \times W_1 + T \times W_2 + CK_1 \times W_3 + CK_2 \times W_4 + H \times W_0
\]

“W” is used as weight attachment for each (W1: percentage for attendance, W2: Midterm exam, W3: Small Test, W4: Final exam, W0: Supplementary-lessons). Next, a target exists in the alignment with the item (six items in this experiment) for every course subject in the achievement information classified by contents of a scores (Fig. 6). Moreover, the student's desired target value and achievement ratio, the others' desired target values and achievement ratios are shown in the achievement information classified by contents of a scores. With reference to this information, the student can check and judge synthetically each content at each lesson and performs a self-evaluation. In addition, the achievement ratio \(X\), classified by the contents for every lesson, is shown below.

<table>
<thead>
<tr>
<th>Number of lessons</th>
<th>Attendance</th>
<th>Supplementary-test</th>
<th>Midterm - Final exam</th>
<th>Achievement quotient according to contents (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>S1</td>
<td>T1</td>
<td>H1</td>
<td>(S1+T1+H1) \times 50</td>
</tr>
<tr>
<td>2</td>
<td>S2</td>
<td>T2</td>
<td>H2</td>
<td>(S2+T2+H2) \times 50</td>
</tr>
<tr>
<td>\vdots</td>
<td>\vdots</td>
<td>\vdots</td>
<td>\vdots</td>
<td>\vdots</td>
</tr>
<tr>
<td>n</td>
<td>\vdots</td>
<td>\vdots</td>
<td>\vdots</td>
<td>\vdots</td>
</tr>
<tr>
<td>n-1</td>
<td>Sn-2</td>
<td>Tn-2</td>
<td>Hn-2</td>
<td>(Sn-2+Tn-2+Hn-2) \times 50</td>
</tr>
<tr>
<td>Total Value</td>
<td>\sum S\times 100</td>
<td>\sum T\times 100</td>
<td>\sum H\times 100</td>
<td>\sum CK\times 100</td>
</tr>
</tbody>
</table>

\[
S(\text{Percentage of attendance} \%) = \frac{\sum S_i}{n-2} \times 100
\]

\[
T(\text{Midterm exam achievement quotient} \%) = \frac{\sum T_i}{n-2} \times 100
\]

\[
H(\text{Supplementary-lessons Achievement quotient} \%) = \frac{\sum H_i}{n-2} \times 100
\]

\[
R(\text{Comprehensive achievement quotient} \%) = S \times W_1 + T \times W_2 + CK_1 \times W_3 + CK_2 \times W_4 + H \times W_0
\]

\[
X(\text{Achievement quotient} \%) = (S_{\text{all classes}} + T_{\text{all classes}} + H_{\text{all classes}}) \times 50
\]

Fig. 11: Calculation method of the results information

The sum as a result of the percentage of attendance (S) and the quiz achievement ratio (T) might be 100%. In this
experiment, the target in one content of study was set up in one lesson and is expressed with the following formula

\[ X'\text{"Achievement quotient according to contents : \%."} = (S_{n-2} + T_{n-2} + H_{n-2}) \times 50. \]

3. Evaluation Experiment of System
3.1 Purpose
The purpose of this experiment was to perform distance education by the supplementary lesson learning function for the absentee who was not able to attend a lesson for an unavoidable reason, and to evaluate whether the learning motivation was increased.

3.2 Experimental Method
The subject "management information theory" was presented to 75 science and engineering university students. The experimental lessons for this lesson assistance system consisted of 12 lessons, and questionnaires were distributed about the learning motivation for the lessons using this system, and the lessons not using this system.

3.3 Results and Consideration
(1) The results of the study and volition of the participants with and without the supplementary lesson learning function (Table 1)

<table>
<thead>
<tr>
<th>Supplementary lessons learning function</th>
<th>Average</th>
<th>S.D.</th>
<th>Sig.Dif.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Before</td>
<td>2.853</td>
<td>0.783</td>
<td>**</td>
</tr>
<tr>
<td>After</td>
<td>3.973</td>
<td>0.735</td>
<td></td>
</tr>
</tbody>
</table>

* By the case where a significant difference is in an average by the T test, ** showed significance 1%.
** S.D.: Standard Deviation, Sig.Dif: Significant Difference
*** The question "When you are absent from the lesson for the unavoidable reason, what do you think about the learning motivation over a lesson using supplementary lessons as compared with a lesson which does not use ?" was asked for the reply by a five-affair method; “5: Motivation comes out very much.” ~ “1: Motivation does not come out at all.”

As shown in Table 1, the evaluation of the study and the volition of the participants for lessons with the supplementary lesson learning function was high. From these results, a supplementary lesson study is expected to improve learning motivation.

(2) Study and volition of participants with and without supplementary lessons and target setups

![Fig. 12 Comparison of study and volition of participants with lessons using the system and not using the system](image-url)
Fig. 13: Comparison of study and volition of participants with supplementary lessons and lessons using the target setup

*** In order to evaluate the lesson using a system, the question "Please answer about the learning motivation at the time by comparing the lesson with a supplementary lesson learning function and a target setup function with the lesson without them." was asked using a five-step scale, from “5: Motivation is much involved.” to “1: Motivation is unchanged”.

As a result (Fig. 12), the evaluation with lessons using the system were higher than with lessons not using the system. Furthermore, when a function of both was used, that is, the supplementary lesson study and the target setup functions, the effect was most shown by the improvement in learning motivation (Fig. 13). From these results, if both the target setup function and the supplementary lesson learning function are used, a synergistic effect for improvement in learning motivation is expected.

4. Conclusion and Future Issue

An experiment in performing distance education by a supplementary lesson learning function for an absentee student was conducted. The absentee student could not attend the lesson. The experiment verified whether increasing learning motivation was an effect.

As a result, the following conclusions became clear.

1) By applying the supplementary lesson learning function of the lesson assistance system, improvement in learning motivation is expected.

2) In the lesson using the supplementary lesson learning function, improvement in learning motivation is expected in comparison with the lesson not using this function.

3) The lesson using both the supplementary lesson and the target setup can be expected to most improve learning motivation.

It is thought that an absentee student's learning motivation can be improved by participating in distance education with a supplementary lesson learning function. Future work includes using a formative evaluation of this system. Evaluation of teaching materials will be necessary for students during supplementary lesson learning to gauge the student's reaction. The understanding and learning motivation of a student can increase more than in the conventional lesson by modifying the teaching materials depending on the reaction.

Next, it will be possible to introduce a lesson assistance system that assigns lessons automatically to a subject according to that student's capability and understanding. A student who understands a lesson is provided with advanced information, and a student who seldom understands a lesson is provided with basic information. Thus, it is thought that each student's study level can be raised by offering information according to the student's level.

Acknowledgment

We thank all the people who cooperated in the experiment.
References


Foreign Language Learning Motivation: Extensive Reading and Graded Readers

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Abstract

This paper describes an ongoing study evaluating the motivational effect of graded readers and extensive reading on Japanese engineering students learning English as a Foreign Language (EFL). The study evaluates attitudes and motivational orientations towards graded readers following a semester-long reading class which required learners to read extensively and take online quizzes via the Moodle Reader Module. Motivational orientations were assessed using the Graded Reader Instructional Materials Motivational Survey (GR-IMMS), a questionnaire comprised of adapted scales from Keller’s (2010) Instructional Materials Motivational Survey (IMMS) and open-ended items. Results of 272 (n=272) completed surveys indicated that the majority of learners positively endorsed extensive reading and the online evaluation system, and that content features, genre and text characteristics influenced learners’ perception of texts. Each of the cognitive variables examined in the GR-IMMS scales were also positively endorsed. The implications of these findings are discussed as they relate to Japanese engineering students learning EFL.

Introduction

While English as a Foreign Language (EFL) has traditionally been a required subject for Japanese tertiary learners in liberal arts or business departments, it has increasingly become a compulsory part of science and technology undergraduate degrees in that country as well. These requirements reflect a number of related trends, including: the growing importance of English as a lingua franca for science and technology, an increasing move towards internationally accredited credentials, and Japanese governmental policies promoting English as means to foster commerce, research and international understanding (Crystal, 2003; Kishimoto, 2013; Mok, 2006).

With the expansion of the English curriculum, EFL instructors teaching engineering majors have encountered a number of challenges associated with this particular population of learners, including their lower proficiency and interest in English, and the somewhat distracting role English plays in competing for time with engineering studies (Johnson, 2013; Koga, 2010; Kuwabara, Nakanishi, & Koma, 2005). These characteristics, combined with other cognitive and affective variables observed to play a role in the demotivational states in Japanese tertiary EFL learners (Berwick & Ross, 1989; Burden, 2002; Falout & Maruyama, 2004; Saito, 2007), contribute to the challenge of teaching EFL to Japanese engineering students.

In order to better meet and address the particular needs of specific populations of language learners, researchers have examined the role classroom factors play in facilitating learning. One important classroom factor that has been identified to directly affect learners is
instructional materials. In particular, instructional materials have been identified as having motivating and demotivating influences on learners (Chambers, 1998; Falout & Maruyama, 2004; Gorham & Mille, 1997; Peacock, 1997). Earlier studies conducted by the author have indicated that Japanese engineering students respond distinctively to different genres of instructional materials, and to their specific characteristics (Johnson & Johnson, 2012). The latter were found to be particularly evident in reading classes in which learners read extensively from self-selected graded readers (Johnson 2014a, 2014b). These findings reflect those of other studies which found that FL learners’ attitudes, degree of enjoyment, and level of interest were positively affected by reading extensively with graded readers (Al-Homoud & Schmitt, 2009; Cho, & Krashen, 2001; Critchley, 1998; Dupuy, 1997; Forrest, 1997; Hayashi, 1999; Iwahori, 2008; Mason & Krashen, 1997; Powell; 2005; Robb & Susser, 1989; Tanaka & Stapleton, 2007).

This study endeavors to expand upon previous research in this area, and on prior research conducted by the author, by further examining the motivational influence of graded readers on Japanese engineering students’ EFL learning motivation. The ultimate goal of this research is to identify instructional materials that appeal to the target population of learners, and to better understand how their constituent characteristics contribute to their motivational appeal.

Study overview

Japanese engineering students have been described as reluctant language learners (Nishizawa, Yoshioka, & Fukuda, 2010). One possible means of overcoming this reluctance, and to promote higher levels of motivated engagement, is though providing such learners with instructional materials that appeal directly to their needs, levels, and interests. The range of levels and content within graded readers series, and the self-selectivity aspect of extensive reading, suggest that it might serve to provide greater appeal to segments of EFL learners such as Japanese engineering students.

The goal of this study was to evaluate Japanese engineering students’ motivational orientations toward ER and graded readers following a semester-long reading class where they were required to read self-selected graded readers and take weekly quizzes online through the Moodle Reader Module. The data was collected from participants over two consecutive years in which the reading class was offered. It was thought that the retrospective evaluation of the materials and system used in class would provide insight into the types and characteristics of graded readers students found motivating, as well as other aspects of the course design that either facilitated or impeded motivated behavior. The following research questions reflect these goals and guided this inquiry.

RQ1: How did learners perceive the use of graded readers and the online evaluation system?
RQ2: In what ways did the use of graded readers and the online evaluation system affect learner motivation?
RQ3: What specific characteristics of graded readers contributed to their motivational appeal?

Methods

Data collection and analysis

Data collection was carried out with the Graded Reader Instructional Materials Motivational Survey (GR-IMMS), a questionnaire comprised of scales adapted from Keller’s (2010) Instructional Materials Motivational Survey and additional open-ended items (see
Appendix 1). Like the IMMS, the GR-IMMS measures attitudes, relevance, confidence, and satisfaction components of instructional materials according to Keller’s ARCS model of motivation (Keller, 2010). These scales have been demonstrated to be effective in evaluating motivation across a wide range of educational contexts and with a variety of different instructional materials (Bollinger, Supanakoorn, & Boggs, 2010; Corbalan, Kester, & Van Merrienloer, 2009; Jakobsdottir & Hooper, 1995; Pittenger & Doering, 2010; Rodgers & Winthrow-Thorton, 2005). The GR-IMMS scales were rewritten and adjusted to better assess the specific characteristics of graded readers. The GR-IMMS has been trialed and validated in previous studies where it has been demonstrated to have good internal reliability (Johnson, 2014a, 2014b). The GR-IMMS also contained a section of open-ended items which inquired about learners’ 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 ten to fifteen minutes to complete. A total of 284 questionnaires were collected, of which 270 (N=270) 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 GR-IMMS sections, while open-ended items were filled out selectively by participants. GR-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 applied chemistry and mechanical engineering. A total of 284 (n=284) students filled out questionnaires, although the data represents responses from 270 (N=270) 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

GR-IMMS results

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 3.36 derived from the five-point Likert scale items. This was followed by Confidence (CON) (M=3.29), Attention (ATT) (M=3.01) and Relevance (REL) (M=3.17). The Cronbach’s alpha for each scale (CON $\alpha=0.71$; ATT: $\alpha=0.82$; REL: $\alpha=0.79$ and SAT: $\alpha=0.80$) indicated good internal reliability for each. While SAT was the most highly endorsed overall, its average range of 2.81 to 3.75 indicates a range of variability in responses.
Table 1: Graded Reader IMMS Scale Summary

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<tr>
<th>Scale</th>
<th>n of items</th>
<th>n</th>
<th>( \alpha )</th>
<th>m</th>
<th>min</th>
<th>max</th>
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Results of individual IMMS items are provided in Table 2. Two of the top five most highly endorsed items were from the SAT scale (SAT6 \( M=3.70; SD=1.02 \); SAT1 \( M=3.57; SD=1.09 \)) and ATT scale (ATT5 \( M=3.52; SD=.98 \); ATT4 \( M=3.50; SD=.98 \)), while the second highest was from the CON scale (CON4 \( M=3.59; SD=1.03 \)). Three of the least endorsed items were from the ATT scale (ATT8 \( M=3.01; SD=.82 \); ATT2 \( M=3.05; SD=1.01 \); ATT6 \( M=3.07; SD=.95 \)), while SAT2 (\( M=2.81; SD=1.05 \)), REL3 (\( M=2.75; SD=.96 \)), and CON2 (\( M=3.07; SD=1.03 \)) were also among the least endorsed individual items.

Table 2: Graded Reader IMMS: Item Summary

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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

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<th></th>
<th>1</th>
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<td>3. ATT</td>
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<td>4. CON</td>
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**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 211 responses were received for this item. The majority of responses were positive (78.6%: n=166), while 29, or 13.7%, were negative (see Table 4). The remainder of responses were either mixed (n=12: 5.6%), with students expressing mixed positive and negative feelings, or ambivalent (n=8: 1.8%), with such participants expressing that they had no particular feelings using graded readers. The most frequent positive results were associated with feelings of achievement or English improvement (n=29). Examples from this category of responses included “Reading every day made me feel like my English improved” (S255) and “It was very difficult at the beginning, but I got better at reading from the middle of the semester” (S63). Choice of content and book level was the second most positively endorsed aspect of the course, as exemplified by the response “I thought it was good, choosing books that matched my interest and level” (S110). Another highly endorsed aspect of the course was its perceived enjoyability (n=22). A sample of this type of response was “It was really fun, I enjoyed reading the books, all the different kinds of stories” (S59). A further area positively endorsed was “confidence” (n=18) where participants described increasing confidence the more they read, and with 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). The novelty aspect of this course also appeared to be a positive factor for learners, with 14 (N=14) participants describing the course as a new and unique experience, as expressed in the following sample response, “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). Receiving the same number of responses was “other transformation”, 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 first open-ended item received comparatively fewer negative responses (N=29). The most common category of negative response came from those who perceived the graded reader course as being difficult (n=18). Examples of this type of response included “it wasn’t interesting for me, reading those books was difficult” (S110), and “It was too difficult to read every week” (S135). A number of participants also negatively endorsed the class style. One example of this type of response was, “This kind of class was a pain, I’d prefer a normal class more” (S22). The final category of negative response came from those who stated that they had no interest in, or disliked, studying English (n=5). These feelings appeared to extend to extensive reading and the use of graded readers, as illustrated in the response “I don’t really like English so I didn’t like doing it (reading and the online quizzes) at all” (S27).

Table 4: Open-ended item 1: Summary of positive & negative responses

<table>
<thead>
<tr>
<th>Positive (n=166) 85.2%</th>
<th>Negative (n=29) 14.8%</th>
</tr>
</thead>
<tbody>
<tr>
<td>achievement/improvement n=29</td>
<td>Difficult n=18</td>
</tr>
<tr>
<td>choice n=26</td>
<td>Didn’t like class styles: n=8</td>
</tr>
<tr>
<td>enjoyment: n=22</td>
<td>No interested in, don’t like, English 5</td>
</tr>
<tr>
<td>confidence: n=18</td>
<td>opportunity n=11</td>
</tr>
<tr>
<td>novelty n=14</td>
<td>class style n=10</td>
</tr>
<tr>
<td>other transformation n=14</td>
<td>promote specific skills n=8</td>
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<tr>
<td>learning appeal n=12</td>
<td>other positive responses n=22</td>
</tr>
</tbody>
</table>

Preferred graded reader types

The second open-ended item inquired about the types graded readers participants preferred using. Responses fell into four categories: content features, genre, structural or layout characteristics, and publisher type or series (see Table 5). 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 (n=135). Participants particularly liked books that they perceived to be easy (n=38). They also identified readers that matched their personal interests (n=34) 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 feature liked by learners were understandablity (n=9) and daily life (n=7). Responses in the understandability category described readers with storylines, particularly character interactions, which were easy to follow, while “daily life” described readers which provided a glimpse into day-to-day activities such as work or school in other countries.

The second most frequently cited attribute of preferred graded readers was genre (n=95). Movie-related graded readers (n=24) 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=15), with students explaining that they liked following stories and their plots. This was followed by mystery-themed graded readers (n=14), 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 genre was biographies (n=6). 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 “characteristics” (n=38). A number of students (N=14) 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=7), 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 Module. 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.

Table 5: Open-ended item 2: Attributes of preferred readers

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<th>Content features (n=135)</th>
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<th>Characteristics (n=38)</th>
<th>Publisher (n=12)</th>
</tr>
</thead>
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<td>pictures (n=14)</td>
<td>Foundations (n=8)</td>
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<td>short (n=7)</td>
<td>MacMillan (n=2)</td>
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<td>familiar (n=22)</td>
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<td>word count (n=5)</td>
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<td>suspense (n=2)</td>
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A number of students (n=12) also identified preferred books by specific publishers. The most popular books type in this category were those in the Cengage Foundations series
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 attributes

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=62), reader characteristics (n=36), and genres (n=31). The content characteristic most frequently cited as having a negative effect on learners’ perception of graded readers was “hard to follow” (n=24). 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 books. The second most cited disliked reader characteristic was “difficult” (n=18). 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=9). Dark stories were described 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.

Learners also disliked graded readers with particular layout or design characteristics. Within this category the most disliked feature (n=11) 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 entire length and in passing their online quizzes. A further characteristic of books that was evaluated negatively was “tight layout” (n=7). These were described as graded 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.

Table 6: Open-ended item 3: Attributes of disliked graded readers

<table>
<thead>
<tr>
<th>Content Features (n=62)</th>
<th>Characteristics (n=36)</th>
<th>Genre (n=31)</th>
</tr>
</thead>
<tbody>
<tr>
<td>hard to follow n=25</td>
<td>insufficient pictures n=11</td>
<td>biographies n=8</td>
</tr>
<tr>
<td>difficult n=18</td>
<td>short / low level n=9</td>
<td>non-fiction n=6</td>
</tr>
<tr>
<td>dark n=9</td>
<td>long n=8</td>
<td>history n=5</td>
</tr>
<tr>
<td>uninteresting n=7</td>
<td>tight layout n=7</td>
<td>mystery n=3</td>
</tr>
<tr>
<td>unfamiliar n=3</td>
<td>too many pictures n=1</td>
<td>traditional n=3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>horror n=3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>romance n=3</td>
</tr>
</tbody>
</table>
Participants also described a dislike for graded readers of particular genres. The most frequently cited disliked genre was biographies (n=8), 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 non-fiction (n=6) and historical (n=5) 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 in 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 objective of this study was to examine learners’ overall perception of graded readers. Data collected from the first open-ended item indicated that learners had an overall positive impression of learning English with graded readers and the online evaluation system. These results are reflective of the earlier findings with smaller samples of Japanese engineering students learning EFL in a similar educational context (Johnson, 2014a, 2014b). As this particular segment of learners has been identified as being “reluctant” in regard to language learning (Nishizawa, Yoshioka, & Fukuda, 2010), this result is encouraging as it provides hope that such positive attitudes towards instructional materials and procedures might result in increased engagement and improvements in learning outcomes (as seen in Bahous, Bacha, & Nabhani 2011; Christophel & Gorham, 1995; Gorham & Christophel, 1992; Meshkat & Hassani, 2012; Williams, Burden, & Al-Baharna, 2001).

The second goal of this paper was to evaluate how the use of graded readers and the online evaluation system influenced learner motivation. The overall positive endorsement of all scales within the GR-IMMS indicated that the graded readers and the online evaluation system appealed cognitively to learners in a manner supporting motivational engagement. High endorsement of items from the satisfaction scales (SAT m=3.36), when viewed with the first open-ended item’s endorsement of achievement/improvement, indicated that achievement motivation needs were satisfied. These findings reflect those of other studies which also found that learners felt that their FL skills improved after taking part in graded reader courses (Bell, 2001; Constantino, 1995; Horst, 2005; Horst, Cobb & Meara, 1998). The high frequency of selectivity as a reason for positively endorsing the course suggests that expectancies were met as learners found that the readers they selected satisfied their short-term goals. These are important results as expectancy and satisfaction of proximal goals has been tied to achievement (Wigfield 1994; Wiggfield & Eccles 1992). Although this type of achievement motivation has been said to be inferior to mastery-oriented motivation (Ames, 1992), for learners without a clear intrinsic interest in the foreign language the extrinsic motivation to read within an achievement framework in this type of class provides an initial impetus for engaging English books. As seen in a number of the open-ended responses, this motivation can give way to a more intrinsic orientation. This sentiment is reflected in the following responses to the first open-ended item, “At first I tried hard to get the word count I needed, but I found I became more and more interested in the books the more I read” (S179).

Another encouraging motivational finding was the high endorsement of the confidence items. This endorsement, combined with students’ strong preference for easy books as described 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). As self-selected graded readers appear to promote confidence in learners, they should be promoted for use with this segment of learners, particularly considering the low levels of FL learning confidence generally present in Japanese EFL learners (see Johnson
The final objective of this study was to identify which types of graded readers learners liked using. The number of types of graded readers identified as being “liked” was over twice as many as those “disliked”. Within the sample used in this study it was clear that content features that aligned with learners’ skills and interests were perceived to be most preferred. A range of genres, from movies, to fiction, to mystery were also demonstrated to be attractive to learners, as were the physical layout and presentation features of the texts themselves such as illustrations, length, and featured word counts. The range of responses provided, with 34 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).

Conclusion

This study demonstrated that graded readers used in conjunction with an online evaluation system represent a positive curricular alternative for Japanese engineering students learning EFL. The positive endorsement of the satisfaction, confidence, relevance, and attention GR-IMMS scales indicated that graders readers combined with online evaluation appealed cognitively to learners in a manner that supported motivational engagement. These findings were supported by the open-ended items 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. 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. Despite these reservations, the potential benefits of using graded readers and autonomous online evaluation systems represent a positive curricular alternative for reluctant EFL learners such as Japanese engineering students. It is hoped that through further research the value of these materials and approaches in motivating learners can be further examined.

References


of English as a foreign language: the effect of a single exposure to interesting, comprehensible reading. In Reading Improvement, 38(4), 170-175.


Appendix 1

**Part 1: GR-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?
a. **Title:** Photovoice and TPACK: Using documentary photography and storytelling in teacher education

b. **Topic Area:** Teacher Education, Cross-disciplinary areas of Education

c. **Presentation Format:** Poster Session

d. **Sentence description:** This presentation will discuss photovoice, the use of documentary photography and storytelling, as a strategy for developing Technological Pedagogical Content Knowledge (TPACK) in teacher education. The presenters will provide an overview of photovoice and discuss its theoretical underpinnings, including its strengths and weaknesses as a research methodology and teaching strategy. This session will also display photographs and stories from two photovoice studies and discuss how photovoice aligns with TPACK.

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Kimberly A. Persiani  
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Title: L2 reading fluency development: Successes and failures

Topic area: ESL/TESL

Presentation format: Poster session

Presentation description (54 words): This presentation explains and examines a series of longitudinal studies focusing on using timed and extensive reading to help EFL students develop reading fluency. The studies use both quantitative and qualitative data to explore actual and perceived gains. Fluency development is also modeled and the implications for teaching and further research are also discussed.

Author details:
Andrew Atkins
Department of English Communication
Kinki University
andrew@kindai.ac.jp
Abstract (169 words)

This paper provides a discussion of the results of a series of 4 longitudinal studies that utilize linguistic and non-linguistic variables predicted to influence L2 reading fluency to examine the successes and failures of L2 learners to improve their English reading fluency. The studies used online Timed Reading and Extensive Reading with participants from a mid-to-high level public and a mid-level private university in western Japan (N=613). In addition to the reading variables, a range of other variables was measured that includes vocabulary size, word recognition reaction times, working memory and speed of thinking. The relationship between the measured variables is explained using correlation and regression, ANOVA and latent variable growth curve modeling, and provides insight for reading researchers and teachers. Results from a short open-ended survey are also examined to discover student impressions of the required activities. Recommendations are made for further research into the issue, and how the findings could be used for Extensive Reading level placement or to assist decision making about remediation for weaker students.
Improving Online Forums for Pre-Conference Multicultural Collaboration and Communication

Todd Thorpe, Shigehiro Haruki, Andrew Atkins

Introduction

In recent years, the use of Online Asynchronous Discussion (OAD) forums has become an important educational tool to support a wide range of teaching and learning objectives. OAD forums have the potential to facilitate learning beyond the constraints of time and location if they are designed and used properly. Three months prior to a Model United Nations (MUN) conference called JUEMUN, the authors used OAD forums to facilitate pre-conference communication between 177 student chairs, delegates and journalists from 49 different universities. In this paper, the authors will explore past research on the benefits and challenges of using OAD forums for teaching and learning and explain how they were used to facilitate pre-conference communication. The authors will also share the results of an online survey and face-to-face interviews that were used to assess the overall effectiveness of the conference’s OAD forums. Based on these results, the authors will suggest some changes that could be used to improve the OAD forums for future pre-conference communication.

Benefits and Challenges of OAD Forums

OAD forums provide an opportunity for students to be part of a virtual community in which they can perform a common task of learning together by exchanging messages over an extended length of time rather than back and forth simultaneously. Past research on online asynchronous discussion forums exposes many benefits and challenges that educators should be aware of before using them as teaching or online communication tools.

Benefits of OAD Forums

There are a number of benefits to using online asynchronous discussion forums in teaching. As asynchronous forums allow students to participate in online discussions at any time and place, students are not only able to think about their responses before
posting them, but also post comments in any order or on any topic (Murphy, 2001). This extra time and freedom to formulate their thoughts and ideas has the potential to promote higher level learning such as analysis, synthesis, evaluation as well as clear and precise thinking (Garrison, 1993; Bonk & Zhang, 2006; Garrison & Kanuka, 2004). According to Warschauer (1997), the occasional reluctancy to interact in face-to-face communication due to issues such as race, gender, accent or status can be alleviated by using asynchronous forums. The freedom of asynchronous discussions allows for more flexibility in communication (McComb, 1993).

Ruberg, Moore and Taylor indicated that online asynchronous discussions may provide students with new perspectives, a way to imagine another point of view, or a deeper understanding of the material (1996). These claims are also highlighted by other studies that have shown asynchronous discussions and collaboration to increase students’ overall learning (Diaz & Entonado, 2009; Er et al., 2009) and shift the locus of control in favour of the student with less domination by the teacher (Althaus, 1997). Garrison and Kanuka praised this online collaboration and stressed that it is a necessary component to sustaining educational experiences over time (2004). While there are numerous and varied benefits, OAD forums are not without their challenges.

**Challenges of OAD Forums**

While many educators have praised the educational benefits of OAD forums, just as many have identified various challenges. Burg (1994) identified four obstacles when using OAD forums.

1. lack of visual and aural cues
2. working collaboratively
3. deciding why, when and how to contribute
4. feeling out of sync

In a survey in 2000, Tiene found that a majority of the respondents preferred face-to-face interaction and underlined four challenges to using online asynchronous discussion forums.

1. not having a computer at home
2. lack of spontaneity
3. the volume of messages
4. difficulty establishing momentum in the discussion
Other studies have also pointed out some additional challenges of using OAD forums. Hew and Cheung (2003) noted that participants' procrastination to respond to postings is a problem, while Oliver and Shaw highlighted that online “contributions were not highly interactive” among participants in their study (2003, p.56). Another challenge stems from the fact that text-messages are relatively deficient when it comes to conveying certain types of information (Matheson & Zanna, 1989).

There are definitely a number of obstacles and strengths that need to be taken into account when using OAD forums for teaching and learning. Understanding these benefits and challenges can have an enormous impact on their application and overall effectiveness in meeting educational goals. With these benefits and challenges in mind, how can OAD forums be employed to facilitate pre-conference communication between universities students from 49 different universities representing 25 different nationalities?

The JUEMUN and JUEMUN Journalism Conference

To fully understand how OAD forums were used to facilitate pre-conference communication, a firm understanding of the JUEMUN and JUEMUN Journalism conference is essential. Japan University English Model United Nations, commonly referred to as JUEMUN, is an annual faculty-organised Model United Nations (MUN) conference held in the Kansai region of Japan. JUEMUN Journalism is a collaborative multicultural journalism simulation that was incorporated into the JUEMUN conference in 2013. Both JUEMUN and JUEMUN Journalism have slowly grown into Japan’s premier English United Nations and journalism simulations.

JUEMUN

JUEMUN was founded by three Canadians who are teaching at different universities in Japan. Professor Craig Smith and Associate Professors Lori Zenuk-Nishide and Todd Thorpe have combined their MUN experience of over 50 years to offer a unique and innovative learning opportunity for university students around the world. The annual JUEMUN conference is hosted on a rotating basis between Kinki University, Kyoto University of Foreign Studies and Kobe City University of Foreign Studies.
Each JUEMUN agenda is adopted after careful and extensive deliberation and discussion by the founders. These chosen agendas are always issues of great importance to the world that need to be addressed with comprehensive and innovative solutions.

At each JUEMUN conference, participants experience cooperative hands-on learning, allowing them to confront an issue in English from the perspective of their assigned country. Through these experiences, during pre-conference online discussions, and in the conference committee sessions, participants develop an appreciation of differing viewpoints, the frustration of negotiation, the rewards of cooperation, and a broader view of the human side of international relations and diplomacy.

JUEMUN differs from other MUN conferences in that each country delegate is pre-assigned to 1 of 5 committee groups within a meeting room. Each meeting room of approximately 60 students is run by two chairs and two assistant chairs. Each of the 5 committees in a meeting room consists of approximately 8 to 12 students and deals with a topic closely related to the meeting room agenda. Table 1 illustrates each meeting room agenda and the committee groups for the 2014 JUEMUN conference. The number of students in each room and committee are shown in parentheses.

<table>
<thead>
<tr>
<th>Meeting Room #1 (65)</th>
<th>Room #2 (54)</th>
<th>Room #3 (58)</th>
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<tbody>
<tr>
<td><strong>Agenda:</strong></td>
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</tr>
<tr>
<td><em>Put Every Child in School</em></td>
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<tr>
<td>Chairs: (2)</td>
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<tr>
<td>Assistant Chairs (2)</td>
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<tr>
<td>Journalists:</td>
<td></td>
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<tr>
<td>Video (2), Audio (2) Written (2)</td>
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<td>Committee #1 topic:</td>
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<td>Humanitarian Emergencies (12)</td>
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<td>Shortage of Classrooms (12)</td>
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<td>Committee #3 topic:</td>
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<td>Gender Discrimination (10)</td>
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<td>Unaffordable Costs (10)</td>
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<td><strong>Agenda:</strong></td>
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<td><em>Improve the Quality of Learning</em></td>
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<tr>
<td>Chairs: (2)</td>
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<tr>
<td>Assistant Chairs (2)</td>
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<tr>
<td>Journalists:</td>
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<tr>
<td>Video (2), Audio (2) Written (2)</td>
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<td>Learning Materials (9)</td>
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<td><strong>Agenda:</strong></td>
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<tr>
<td><em>Foster Global Citizenship</em></td>
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<tr>
<td>Chairs: (2)</td>
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<tr>
<td>Assistant Chairs (2)</td>
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<td>Committee #1 topic:</td>
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<td>Inadequate Focus on Values for Global Citizenship (8)</td>
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<td>Committee #2 topic:</td>
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<td>Lack of Teacher Capacity for Global Citizenship (10)</td>
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<td>Lack of Leadership on Global Citizenship (9)</td>
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<td>Outmoded Curricula &amp; Learning Materials for Global Citizenship (9)</td>
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<tr>
<td>Legacy of the Current Education System (12)</td>
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</table>

Table 1: JUEMUN 2014 Agendas and Committee Groups
JUEMUN Journalism

For JUEMUN Journalism, participating students take on the roles of video, podcast and written journalists and report on what is happening in their assigned meeting room. Throughout the JUEMUN conference, 9 journalist pairs of one Japanese student and one international student, collaborate, explore, engage and finally create digital media broadcasts in English. These audio, video and written news reports are then uploaded and shared on an interactive news hub called JUEMUN journalism online. This allows conference participants and other website guests to enjoy and comment on all of the journalists’ hard work. An outline of the JUEMUN Journalism process is illustrated below in Figure 1.

![Diagram of 2014 JUEMUN Journalism Process](image)

Figure 1: 2014 JUEMUN Journalism Process

JUEMUN Pre-conference Preparation for Participants

To get the most out of a JUEMUN event, Chairs and Assistant Chairs, Country Delegates and Journalists are encouraged to start their preparations a few months prior to the conference. The recommended preparation for each of these roles is shown in Table 2.
Table 2: Recommended Preparation for the 3 JUEMUN Conference Roles

<table>
<thead>
<tr>
<th>Role</th>
<th>Recommended Preparation</th>
</tr>
</thead>
</table>
| Chairs and Assistant Chairs | -Learn the JUEMUN Rules of Procedure  
-Practice the JUEMUN Rules of Procedure  
-Research the meeting room agenda  
-Research all 5 of the committee topics in the meeting room  
-Practice using the MUN meeting software |
| Delegates                   | -Research the UN and the UN body being simulated  
-Research their assigned country  
-Research the meeting room agenda  
-Research all 5 of the committee topics in the meeting room and understand their assigned country’s policy or stance on each.  
-Learn and Practice using the JUEMUN Rules of Procedure  
-Prepare and Practice a speech  
-Prepare a position paper outlining their country’s policy or stance on the agenda. |
| Journalists                 | -Learn the JUEMUN Rules of Procedure  
-Research written, audio, video journalism techniques  
-Research the meeting room agenda  
-Research all 5 of the committee topics in the meeting room  
-Practice using the editing and publishing software  
-Prepare an article, video or podcast about the agenda being covered |

JUEMUN has slowly grown in size from 51 to 177 participants since its inaugural conference in 2010. Due to this increase, the authors felt that an online platform to facilitate pre-conference preparation and communication was essential. With the goal of addressing these communication and preparation needs for the 2014 conference, the authors decided to add 5 online forums to the existing JUEMUN website.

**JUEMUN's OAD Forums**

In each of the 5 discussion forums, a number of discussion threads or topics were added by the authors. The sole purpose of developing the first online discussion forum, *General JUEMUN Information*, was to share information about the conference with the participants. Some of the topics under this forum included special meal requests, rules of procedure and documents related to the conference theme. The remaining 4 discussion forums were developed with the intention of fostering communication between delegates in the same meeting rooms and committee groups and journalists within the same news formats. The 5 forum themes and their discussion topics are shown in Table 3.
### Table 3: JUEMUN Online Asynchronous Discussion Forums Layout

<table>
<thead>
<tr>
<th>FORUM #1: JUEMUN General Information</th>
<th>FORUM #2: Meeting Room #1</th>
<th>FORUM #3: Meeting Room #2</th>
<th>FORUM #4: Meeting Room #3</th>
<th>FORUM #5: JUEMUN Journalism</th>
</tr>
</thead>
<tbody>
<tr>
<td>Special meal requests</td>
<td>Meeting room #1 general information</td>
<td>Meeting room #2 general information</td>
<td>Meeting room #3 general information</td>
<td>General Information for all journalists</td>
</tr>
<tr>
<td>Rules of Procedure</td>
<td>Committee Group #1</td>
<td>Committee Group #1</td>
<td>Committee Group #1</td>
<td>Video Journalists</td>
</tr>
<tr>
<td>Documents about the conference theme</td>
<td>Committee Group #2</td>
<td>Committee Group #2</td>
<td>Committee Group #2</td>
<td>Written Journalists</td>
</tr>
<tr>
<td></td>
<td>Committee Group #3</td>
<td>Committee Group #3</td>
<td>Committee Group #3</td>
<td>Podcast Journalists</td>
</tr>
<tr>
<td></td>
<td>Committee Group #4</td>
<td>Committee Group #4</td>
<td>Committee Group #4</td>
<td>Meeting Room #1 Journalists</td>
</tr>
<tr>
<td></td>
<td>Committee Group #5</td>
<td>Committee Group #5</td>
<td>Committee Group #5</td>
<td>Meeting Room #2 Journalists</td>
</tr>
<tr>
<td>Regional Bloc: Asia</td>
<td>Regional Bloc: Asia</td>
<td>Regional Bloc: Asia</td>
<td>Regional Bloc: Asia</td>
<td>Meeting Room #1 Journalists</td>
</tr>
<tr>
<td>Regional Bloc: Europe and Others</td>
<td>Regional Bloc: Europe and Others</td>
<td>Regional Bloc: Europe and Others</td>
<td>Regional Bloc: Europe and Others</td>
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<td>Regional Bloc: Africa</td>
<td>Regional Bloc: Africa</td>
<td></td>
</tr>
<tr>
<td>Regional Bloc: Latin America and the Caribbean</td>
<td>Regional Bloc: Latin America and the Caribbean</td>
<td>Regional Bloc: Latin America and the Caribbean</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Signing up for JUEMUN’s OAD Forums**

To prevent unwanted advertising and ensure overall security in the online forums, the authors asked all of the participants to sign up to become a member using either their Facebook, Twitter, Google, Microsoft or Yahoo account. After signing up, a message requesting membership was sent to the the administrators and shortly after this, a confirmation of acceptance was sent to the new member. As a new member, the participants used the password provided in their invitation letter to access the forums and begin communicating.

**Faculty Advisors Supporting JUEMUN’s OAD Forums**

While there were no specific online assignments or minimum requirements for the number of posts to be made by the forum members, the advisors were asked to foster the
participants’ communication by asking and answering questions and encouraging the members to communicate as much as possible.

**JUEMUN’s OAD Forums Evaluation: Methods and Results**

To evaluate the effectiveness of JUEMUN’s first attempt at utilising Online Asynchronous Discussion Forums, the authors developed and administered an online survey in English and Japanese. Some participants were also interviewed to find out more about their ideas for making the JUEMUN OAD Forums more effective.

**Online Survey: Method and Results**

One week prior to the 2014 JUEMUN conference, the participants were asked to submit a position or press paper from a submission page on the conference website. Before being able to submit their paper, they needed to answer four questions about the JUEMUN OAD forums. The four questions that were asked are listed below.

1. Have you signed up as a member of the JUEMUN online forums?
2. Have you read some of the messages in the forum?
3. How many comments did you make in the forum?
4. What are some of the reasons why you didn’t post more comments in the forums?

125 of the 155 delegates and journalists submitted their paper and participated in the online survey. Of these 125 respondents, 89 were Japanese students and 36 were international students. The results of the survey are illustrated below in Figures 2 to 5.

![Figure #2: No. of respondents who became a member of the JUEMUN online forums](image-url)
Figure #3: No. of respondents who read some messages on the JUEMUN forums

![Bar chart showing the number of respondents who read messages on the JUEMUN forums. The chart includes two bars for Japanese participants and international participants. The number of Japanese participants who read messages is 72, and the number of international participants is 25.]

Figure #4: Comments made on the JUEMUN Forums

![Bar chart showing the number of comments made by respondents in the JUEMUN forums. The chart includes two bars for Japanese participants and international participants. The number of Japanese participants who made comments is 68, and the number of international participants is 20.]

Japanese Participants | International Participants

Have you read some of the messages in the JUEMUN Forum?

Japanese Participants | International Participants

How many comments did you make in the JUEMUN Forum?
Interviews: Method and Results

Throughout the JUEMUN conference, the authors conducted 10 interviews to further assess the effectiveness of the JUEMUN OAD forums in hopes of uncovering more ideas to improve the forums for future conferences. The interviews were recorded using an iPhone and analysed a few weeks after the conference. The authors have highlighted some of the comments which have the potential to influence the future development of JUEMUN OAD forums.

Country Delegate (Japanese)

I know I should have posted some comments, but I wasn’t confident in my knowledge of the agenda or my English skills.

Country Delegate (International)

The process of becoming a member wasn’t clear and I didn’t know how to use the forum. I think having everything on Facebook would have been a lot easier because I know how to use Facebook.
Journalist (Japanese)
I was too busy to make any comments and I didn’t know what to comment about. If we had assignments to do with deadlines with examples, it would be easier for students who are doing it for the first time.

Chair (Japanese)
When I looked at the forum, most of the comments were simple introductions and mainly comments from the Advisors. Maybe the Chairs could be forum leaders and encourage the other students to comment more. This might make the forums more active.

Delegate (International)
I didn’t see the point of commenting as I thought I could do the preparation on my own. A lot of us were communicating on Facebook.

Delegate (Japanese)
If there were readings or videos related to the agenda with discussion questions, I probably would have posted some comments. It was a my first time to participate, so I was waiting for others to post, but not many did.

Interpreting the Results and Moving Forward
As this was the first time for the authors to use OAD forums to facilitate pre-conference communication, there are many strategies and changes that could be implemented to increase their effectiveness for future JUEMUN Conferences.

While the membership sign up and password requirements curbed unwanted advertising within the forums, the tight security also had its limitations on forum contributions as some students never signed up and many students found it inconvenient to sign in each time to make a comment. One alternative that was brought up was to use multiple Facebook pages instead of the five JUEMUN forums. Most of the students expressed the convenience of using Facebook and stressed that their familiarity with it would enhance the frequency of their posts.
Having the advisors as forum moderators proved to be a good idea, but a slightly different approach potentially could have yielded more positive results. Having the advisors post interesting and relevant topics and assign online tasks or activities were expressed as positive additions by many participants. Participants also mentioned that these activities could be facilitated by advisors, but also giving the meeting Chairs and head journalists more of a leadership role in the forums might spark more interest among fellow participants and possibly increase the frequency of comments.

Unfortunately, the 2014 JUEMUN OAD forums lacked direction and clear objectives. This made it very difficult for the student members and advisors to know what and when they should post. Many students felt that having clearer posting guidelines such as minimum posting requirements with deadlines would increase the activity and learning potential. One participant also expressed the need for a video outlining the process of becoming a forum member and posting comments.

**Conclusion**

While OAD forums are used as an educational tool to nurture teaching and learning objectives, they are definitely not without their challenges. Based on the research results, it is clear that the JUEMUN OAD forums have a long way to go in order to reach their goal of being an effective online facilitator of pre-conference communication and preparation. The authors aim to implement some changes to the existing forums to improve the effectiveness of pre-conference communication for future JUEMUN conferences.
References


Title: A glimpse at the propositional logic reasoning of prospective teachers.

Topic Area: Mathematics Education

Presentation Format: Paper Session

Description: This session describes work-in-progress research involving the reasoning of prospective teachers when faced with a question involving propositional logic. This session will present a question the prospective teachers were asked to solve and provide quantitative data regarding their solutions and qualitative data relative to the reasoning behind their solutions.

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Abstract:

This paper describes the responses of prospective teachers related to a question involving propositional logic. Participants were given a set of four cards placed face up. They were told each card contained either a circle or star on one side, and either a triangle or square on the other side. Participants were asked to determine which card(s) from a selection of four must be turned over to verify the statement “Every card with a star on it has a triangle on it.” Data from the choices made by the prospective teachers will be provided along with examples of the reasoning used to justify the choices made. The data will be used to discuss the how the reasoning of the prospective teachers meshes with Standard for Mathematics Practice 2, Reason Abstractly and Quantitatively (National Governors Association Center for Best Practices and Council of Chief State School Officers [NGA Center and CCSSO] 2010), that states mathematically proficient students “…bring two complementary abilities to bear on problems involving quantitative relationships: the ability to decontextualize—to abstract a given situation and represent it symbolically and manipulate the representing symbols as if they have a life of their own, without necessarily attending to their referents—and the ability to contextualize, to pause as needed during the manipulation process in order to probe into the referents for the symbols involved.” (p. 6) From the mathematics they studied previously the prospective
teachers had the background to examine the question and create an abstract symbolic representation to use to identify the correct cards.

References:
A GLIMPSE AT THE PROPOSITIONAL LOGIC REASONING OF PROSPECTIVE TEACHERS

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Abstract
This paper describes an initial look at the reasoning of prospective and inservice secondary mathematics teachers on a question involving a statement structurally similar to a conditional statement. This research deals specifically with participants who should have had the necessary course preparation in mathematics at the collegiate level to enable them to successfully answer the question. The importance of this research is related to content knowledge for teaching mathematics, psychological research on deductive reasoning, and using standards for mathematical practice being suggested for students in Grades K – 12. In general, participants were successfully able to see one line of reasoning related to the question, but over 50% did not successfully use a second line of reasoning necessary to obtain a full solution to the question.
Introduction and Related Research

This paper describes how prospective and inservice secondary mathematics teachers responded to a version of a question that is “the most intensively researched single-problem in the history of the psychology of reasoning” (Evans, Newstead, & Byrne, 1993, p.99). Participants were given a set of four cards placed face up. They were told each card contained either a circle or star on one side, and either a triangle or square on the other side. Participants were asked to determine which card(s) from the selection of four must be turned over to verify the statement “Every card with a star on it has a triangle on it.” How prospective and inservice mathematics teachers respond to this question is of interest to mathematics educators because of the connection to mathematical content knowledge, ability to reason about conditional statements, and the connection that can be made to three Standards for Mathematical Practice in the Common Core Standards of Mathematics (National Governors Association Center for Best Practices and Council of Chief State School Officers [NGA Center and CCSSO] 2010).

Desired content preparation for secondary mathematics teachers is best described in The Mathematical Education of Teachers II (MET II) (Conference Board of the Mathematical Sciences, 2012), with detailed descriptions of coursework/experiences in which prospective mathematics teachers should engage. MET II indicates, “A primary goal of a mathematics major program is the development of mathematical reasoning skills.” (p. 55), and one would envision this would mean the type of reasoning being addressed in the question we investigated.

Suggesting how to accomplish this can be seen in discussions of reasoning and proof within the document.

*In order to be able to recognize, foster, and correct their students’ efforts at mathematical reasoning and proof, prospective high school teachers should analyze and construct proofs themselves, from simple derivations to proofs of major theorems. Also, they need to see how reasoning and proof occur in high school mathematics outside of*
their traditional home in axiomatic Euclidean geometry. Prospective teachers can gain experience with reasoning and proof in a number of different courses, including a dedicated introduction to proofs course for mathematics majors, Linear Algebra, Abstract Algebra, Geometry, or a course on high school mathematics from an advanced standpoint. (p. 58 – 59)

The psychological background in which this question can be situated is related to several lines of research and is often discussed within the context of children’s ability to handle propositional logic (e.g. Ennis, 1975). In the discussion of what children can do, the context and structure of the question is often considered important. Citing numerous studies, Ennis writes, “What is it that children cannot do that adolescents can do? Both have the ability to reason in accord with at least some of the principles of propositional logic, and both have considerable trouble with logical fallacies.” (p. 24)

While much work related to this question and line of reasoning has not specifically dealt with mathematics, Stylianides & Stylianides (2008) discussed connections to mathematics education in the context of proof and deductive reasoning. They also address how prior work and discussion related to the question can be situated so as to address proof in school mathematics. The question we explored is attributed to Wason (1966) and is considered a classic with respect to the psychology of deductive reasoning. Participants are given some information and then asked how to verify the statement every card with a star on it also has a triangle on it. This statement can be considered an implication P --> Q, where P corresponds to If a card has a star on it and Q corresponds to then it has a triangle on it. Hence, being able to reason through statements like these clearly fits in the realm of learning mathematical ideas in college and is usually thoroughly discussed and use in any upper division mathematics course where justification and proof are required.

Regarding the connection to the Standards for Mathematical Practice (SMP), we identified
three of the standards related to this research investigation. While the SMP are for K – 12 grade students, the results of this research give some indication how prospective and inservice secondary mathematics teachers are able to engage in these practices. Specifically this question gave them the opportunity to engage in SMP 2: Reason abstractly and quantitatively, SMP 3: Construct viable arguments and critique the reasoning of others, and SMP 7: Look for and make use of structure.

**Methods and Findings**

The following question was given to a group of prospective secondary mathematics teachers and a group of inservice secondary mathematics teachers. The prospective secondary mathematics teachers (n = 10) were enrolled in an Abstract Algebra class at an institution of higher education in midwestern United States. This upper division class was required for a degree in mathematics or mathematics education at this institution. The assessment was given to them in the last two weeks of the semester. The inservice secondary (grades 6 – 12) mathematics teachers (n = 18) were enrolled at an institution of higher education in western United States. Hence, each participant had completed a significant amount of coursework in mathematics prior to completing the question.

Each participant was given the question in figure 1. They were to choose which Card(s) to turn over and explain their reasoning.

While data were collected separately for each group, for purposes of this paper, the data are reported as one group (n = 28). We first looked at how many of the responses were answered correctly, and then we looked at the explanations to examine how many correct responses were also explained with correct reasoning. This information is given in Table 1. It is seen that while 12 responses (42.9%) answered correctly, only 10 (35.7%) provided justifiable reasoning.
Answer the following question and explain your reasoning:

Each card has either a circle or a star on one side and either a triangle or a square on the other side. In order to verify the statement, “every card with a star on it also has a triangle on it”, which numbered card(s) must be turned over?

Figure 1. Question given to students

Table 1

<table>
<thead>
<tr>
<th>Correct Answer (Cards 2 and 3)</th>
<th>Correct Answer and Correct Reasoning</th>
</tr>
</thead>
<tbody>
<tr>
<td>12 (42.9%)</td>
<td>10 (35.7%)</td>
</tr>
</tbody>
</table>

It could be expected that those students enrolled in upper division mathematics courses or inservice courses for secondary mathematics teachers would be successfully able to answer this question and provide appropriate justification, but the data indicate such was not the case. The data in Table 2 show the number of times each card was chosen. Almost everyone selected Card 3, which does need to be examined, and slightly more than one-half selected Card 2, which also does need to be examined. However, as indicated from Table 1, these two selections were not always the only two made as 42.9% chose exactly these two correct solutions. These data show that Card 4 was incorrectly chosen 32.9% of the time.
Table 2

Number (and percent) of times a card was chosen, n = 28

<table>
<thead>
<tr>
<th></th>
<th>Card 1</th>
<th>Card 2</th>
<th>Card 3</th>
<th>Card 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1 (3.6%)</td>
<td>16 (57.1%)</td>
<td>26 (92.9%)</td>
<td>9 (32.9%)</td>
</tr>
</tbody>
</table>

In trying to understand the reasoning used by the participants, we examined the explanations provided as well. Samples of correct and incorrect reasoning are provided. Among the responses with a correct answer and explanation is the following thorough explanation that not only indicates why Cards 2 and 3 must be selected, but also why Cards 1 and 4 do not. This type of reasoning was not typical, but clearly demonstrates a level of desirable reasoning.

*Card 1 does not need to be flipped over because we already know it does not have a star as the card either has a circle or a star on one side. Card 2 needs to be flipped to determine if the other side is a star or circle. If it is a star then we know the statement is false. If it is a circle then you need to also flip card 3. Card 3 needs to be flipped to determine if it is a triangle on the other side. Card 4 does not need to be flipped because it already has a triangle and therefore if the other side has a star it further verifies. If it has a circle then it just is a card with a triangle and circle.*

Some participants thought about the process linearly in that if you tried a certain card and the result held, you would go to the second card. The following correct response provides a rationale that starts with Card 3 and examines scenarios that might happen to eventually show the statement true or false.

*If you turn card 3 and it has a triangle on it then you continue. If not it is false and you stop. If you turn over card 2 and it has a star it is false, if not the statement is true. It says every card with a star has a triangle, not every card with a triangle has a star.*

Among the answers with at least one of Card 2 and Card 3 selected, we find the following similar reasoning, but Card 4 was often included. In this instance, the selection was also viewed linearly, but the inclusion of Card 4 shows some confusion in the reasoning.

*1. Flip card three. If there is a triangle great, we go on, if it doesn't (is a square) then we've disproved the statement. 2. Flip card 4. If there is a circle, we've disproved the statement. If we get a star move on. 3. Flip card 2. If there is a star, then we've disproved the statement. If there is a circle, then given success in steps 1 & 2, the statement is true!*
The following is an example of a response is not only incorrect, but the justification seems to indicate that perhaps the participant was confused about the task.

*Card 4 must be turned over to verify the given statement which proves card 3 has a triangle which means 1 & 2 don't have a triangle or a star on them.*

To further examine the selections made, we looked at all 16 possible choices that could be made regarding choices made when turning over the cards. The number of times each choice was made was recorded and these data are shown in Table 3.

**Table 3**

*Number (and percent) of times a choice was made, n = 28.*

<table>
<thead>
<tr>
<th>Choice of Cards</th>
<th>Number of Times Selected</th>
<th>Percent of Times Selected</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>1</td>
<td>3.6%</td>
</tr>
<tr>
<td>1</td>
<td>0</td>
<td>0.0%</td>
</tr>
<tr>
<td>2</td>
<td>0</td>
<td>0.0%</td>
</tr>
<tr>
<td>3</td>
<td>5</td>
<td>17.9%</td>
</tr>
<tr>
<td>4</td>
<td>1</td>
<td>3.6%</td>
</tr>
<tr>
<td>1 and 2</td>
<td>0</td>
<td>0.0%</td>
</tr>
<tr>
<td>1 and 3</td>
<td>0</td>
<td>0.0%</td>
</tr>
<tr>
<td>1 and 4</td>
<td>0</td>
<td>0.0%</td>
</tr>
<tr>
<td>2 and 3</td>
<td>12</td>
<td>42.9%</td>
</tr>
<tr>
<td>2 and 4</td>
<td>0</td>
<td>0.0%</td>
</tr>
<tr>
<td>3 and 4</td>
<td>5</td>
<td>17.9%</td>
</tr>
<tr>
<td>1, 2, and 3</td>
<td>1</td>
<td>3.6%</td>
</tr>
<tr>
<td>1, 2, and 4</td>
<td>0</td>
<td>0.0%</td>
</tr>
<tr>
<td>1, 3, and 4</td>
<td>0</td>
<td>0.0%</td>
</tr>
<tr>
<td>2, 3, and 4</td>
<td>3</td>
<td>10.7%</td>
</tr>
<tr>
<td>1, 2, 3, and 4</td>
<td>0</td>
<td>0.0%</td>
</tr>
</tbody>
</table>

While there were 26 participants who choose Card 3, we see from Table 3 that 14 participants who selected Card 3 did not also only chose Card 2. Of these 14, five selected Card
3 only, five selected Cards 3 and 4, five selected Cards 2, 3, and 4, and one selected Cards 1, 2, and 3. Card 2 was the second most frequent choice and of the 16 participants who selected Card 2, all always also correctly selected Card 3. However, in four cases they also incorrectly selected either Card 1 or 4.

**Discussion**

The responses to the participants indicates that most of them recognized that in a P --> Q situation, if condition P is met, then one must check if condition Q is met (Card 3). However, less than half of the participants recognized that because P --> Q is logically equivalent to ~Q --> ~P, and ~Q is met (Card 2), then Card 2 would also have to be turned over.

This has implications for precollege preparation in mathematics for prospective secondary mathematics teachers as well as inservice professional development for secondary teachers, because the participants had successfully completed coursework where reasoning strategies required to answer the question have been studied. Yet, participants were not able to see how to use these ideas in a novel situation that is similar to types of questions secondary students are given to explore, both in geometry and in algebra. While engaging in college coursework a prospective secondary mathematics teacher or an inservice mathematics teacher would benefit by examining topics in school mathematics that mimic situations like the question we posed and reasoning through them to see how their college preparation is indeed preparation for teaching high school mathematics. In doing so, some of the vision of MET II, “Attending to the needs of prospective teachers by focusing on reasoning and proof across the spectrum of undergraduate mathematics courses that they take, helps them to make sense of mathematics—and makes it easier to understand, easier to teach, and intellectually satisfying for all course-takers. Thus,
attending to the needs of future teachers in this way benefits all undergraduates.” (2012, p xi - xii), might be accomplished.

Bibliography


Submission for Proceedings

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   International Education in Japan: The G30 Program

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Abstract

The movement to thrust forward Japanese education into the age of internationalization came to realization in 1982 with the formation of the Nakasone Government. The ambitious 1983 target of bringing 100,000 foreign students to Japan was finally achieved in 2003 under Prime Minister Nakasone’s original “International Student 100,000 Plan”. Since that time, The Japanese Ministry of Education, Culture, Sports, Science and Technology (MEXT) has focused its effort on internationalizing its universities by developing an educational system called the Global 30 Project (G30), a plan which is meant to attract 300,000 foreign students by 2020. The G30 Project and similar policies aim to transform Japan into an international education hub. Although these policies seem theoretically sound and viable, the intended outcome of internationalizing Japanese universities has fallen short of its goal. The policies that have shaped the internationalization of Japanese universities are based on increasing the number of foreign students on campuses to internationalize the institutions’, culture and curriculum. Data presented in this paper is based on surveys involving 96 respondents conducted at large prestigious universities in Japan. This study focuses on the reason foreign students select Japan as a destination for higher education as well as issues that affect international students on a daily basis. Analyses from the surveys indicate differences in how international students feel towards their respective universities in terms of support services and intercultural communication opportunities. Findings in this report will be used to identify problems and provide key recommendations on how to improve Japan’s attempt at internationalizing its higher education.

Introduction

According to the Japan Association of Student Services (JASSO) as of 2013, there were 135,519 foreign students enrolled in Japanese private, public and national universities (JASSO, 2013). At this rate of foreign student enrollment it would appear that the goal of 300,000 foreign students by 2020, set by MEXT is not attainable goal. The origin and original policies of the G30 Project were established in 2001 with the intentions of promoting 30 prestigious universities (Yonezawa, 2010). These innovative policies included a 15billion Yen budget to expand 30 institutions that would be recognized as the ‘internationalized core’. The core or key component of this venture of creating an internationalized core was to recruit international students to Japan.

Features of the G30 Project

The premise of the G30 project is to internationalize higher education in Japan. In 2009, 13 universities were selected to be part of the G30 project offering degree programs in a wide range of disciplines ranging from life science, agriculture, environmental studies, information and communication technology and social sciences to name a few. All courses are taught entirely in English; however, G30 students also take Japanese language classes as part of the curriculum. The G30 project consists of national and private universities; each university has autonomy over the organization, management, acceptance, curriculum and other aspects related to the education of international students.
Importance of Research

One key aspect of attaining the goal of attracting 300,000 international students by 2020 is to capitalize on the current international student population by educating the participants as effectively as possible. In doing so, G30 universities should be able to maintain and advance current reputational trends related to international education in Japan.

The data analyzed in this paper on international students’ attitudes and perceptions, highlights positive aspects and addresses negative issues that should be resolved. A well-implemented and effective program will drive future recruiting efforts needed to attain goal the attracting 300,000 students. Increases in international student mobility have furthered the optimism of the G30 project which aims to transform Japan into an international education hub. Although the policies of the G30 project and programs offered by various universities seem theoretically sound and viable, the intended outcome of internationalizing Japanese universities sometimes falls short of the desired target. The main focus of the policies to internationalize Japanese universities was concentrated in increasing the number of foreign students on campuses creating a culture and curriculum sought by international students.

This study will target the specific issues that need to be analyzed in order to make contributions to improve the Global 30 Program and to advance its intended purpose. It aims to provide a clear understanding of the complicated process of internationalizing Japanese Universities so that universities, administrators and the Ministry of Education can develop more effective methods and strategies for educating and helping to assimilate the foreign student population into Japanese society. It is imperative that Japanese Universities not only effectively educate international students but also develop a welcoming environment to encourage the graduates to stay in Japan upon completion of their studies and become productive members of the Japanese economy. This is one of the desirable and important goals of the Global 30 Program.

This study also attempts to provide additional scholarly knowledge on the importance of assimilating international students into Japan; it examines the current state of intercultural communication between foreign and domestic students at the thirteen Global 30 universities.

What Recent Research Suggests

According to Jane Knight’s definition of university internationalization (Knight, 2011) “internationalization of higher education is the process of integrating an international, intercultural, and global dimension into the purpose, functions (teaching, research, and service), and delivery of higher education at the institutional and national levels.” In 1984, Cummings conducted pioneering research into the complex patterns that influenced the immigration and migration of secondary education. In 1992, McMahon published informative research that pinpointed several key factors that impacted the decision of an international student to seek an education overseas. The “push” and “pull” model (McMahon, 1992) helped direct future research by Mazzarol and Soutar (2002) where three distinct stages were labeled in
the pursuit of higher education in a foreign country. First, the preliminary decision to study internationally is made. Inevitably, the decision to not study domestically is ultimately affected by a “push” factor previously published by McMahon (1992). The second stage of the decision process is choosing a host country, which is affected by the following factors: (1) awareness of host country, (2) recommendations from family and friends, (3) issues related to finance, (4) development in the host country, (5) close geographic proximity to the home country, and (6) Recommendations from family and/or friends who previously lived in the host country (Mazzarol et al., 1997, cited in Mazzarol and Soutar, 2002). The third and final stage is when the student chooses which university to attend.

In 1985, the Iwao study (cited in Chandler, 1989) carried out in Japan to classify key reasons why a foreign student chose to study in Japan; it identified an interest in Japanese language and culture as major factors behind the decision to study in Japan. Another early study by Hicks and Amifuji (1987) showed academics were the most important factors where students gained the most satisfaction out of improving their Japanese language abilities, obtaining knowledge that would benefit their future, and the potential to join work-study programs at a Japanese company.

Research Question

What aspects of higher education of international students in the G30 Program may be expanded, modified, or improved to enhance Japan’s international competitive position in attracting students worldwide?

Methodology

Data

The following data were collected via online survey company, SurveyGizmo, from two private and two national Global 30 universities in Japan. Data were collected from May 16th, 2014-July 31st, 2014. There were 96 total respondents with a breakdown of 52 Males (54.2%) and 44 females (45.8%). The Age range of the respondents was from 18-24 years old. Of the 96 respondents, 36% were 1st year students; 29% 2nd year students; 20% 3rd year students; and 15% 4th year students. There were no graduate students who took part in this survey.

Figure 1

Distribution of nationalities represented in this study
Table 1: Show combined statistics for National and Private Universities

My primary reasons for choosing to study at my university are related to the following:

<table>
<thead>
<tr>
<th>Reason</th>
<th>Not important</th>
<th>Somewhat important</th>
<th>Important</th>
<th>Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Specific course of study offered (Major)</td>
<td>5.2%</td>
<td>27.1%</td>
<td>67.7%</td>
<td>96</td>
</tr>
<tr>
<td>Positive reputation connected to my university</td>
<td>9.4%</td>
<td>28.1%</td>
<td>62.5%</td>
<td>96</td>
</tr>
<tr>
<td>Location</td>
<td>14.6%</td>
<td>47.9%</td>
<td>37.5%</td>
<td>96</td>
</tr>
</tbody>
</table>

Table 2: Show combined statistics for National and Private Universities

My primary reasons for choosing to study in Japan are related to the following:

<table>
<thead>
<tr>
<th>Reason</th>
<th>Not important</th>
<th>Somewhat important</th>
<th>Important</th>
<th>Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interest in learning the Japan language</td>
<td>31.3%</td>
<td>38.5%</td>
<td>30.2%</td>
<td>96</td>
</tr>
</tbody>
</table>
As the number of international students has increased from 2.1 million students in 2002 to 3.4 million students in 2009, and is expected to increase to nearly 7 million by 2020, global student mobility is on the rise UNESCO Institute of Statistics (UIS). Increased competition in the form of the opening of new markets signifies the diversity of choices international students have in the selection process of deciding where to study. The factors influencing the decision process range from cost, distance to home country, competition, quality of education and issues related to obtaining a student visa to name a few. In order for Japanese universities, specifically G30 universities, to attract an increasing amount of quality international students, universities need to classify themselves in order to boost enrollment.

According to a study by Daily, et al (2010), in order to attract the most desirable students, the most important factors for international students are post-graduate employment, financial aid, reputation of the institution and accessibility of information. As the G30 program attempts to increase the number of international students in Japan and reach the goal of 300,000 students by 2020, it is imperative to understand the reasons why existing international students originally chose to study in Japan.

In Table 1, the first survey item to be explored, “my primary reasons for choosing to study at my university are related to the following”. The instrument used to collect data on this survey item was a Chi-Square test. The data represented in Table 1 clearly shows that the location of the national and private universities was of a moderate importance to the 96 respondents. 37.5% listed this quality as “important”. Conversely, respondents did select the “specific course of study offered (Major)” and “positive reputation connected to my university” as “Important” or 67.7% and 62.5%
respectively. These factors directly relate to a previous study by Mazzarol and Soutar (2002) where specific factors were characterized as having an impact on Australian educational institution for international and domestic students. The six variables identified in this study “were the quality and reputation of the institution, the recognition of the institution’s qualifications in their own country, the international strategic alliances the institutions had, the quality of the institution’s staff, its alumni base and its existing international student population” (Mazzarol and Soutar, 2002:87).

The second survey item identified reasons why international students decided to choose Japan as their country of choice. “My primary reason for choosing to study in Japan are related the following”, This Chi-Square Test item listed eight items that respondents ranked from “not important”, “somewhat important”, and “important”. Of the 96 respondents, 81.3% stated, “not being accepted to my first choice country”, as “not important”. This is significant in that it shows that for the vast majority of the students who took part in this survey indicated Japan was their primary selection for choosing a host country. This data corresponds to (Mazzarol et al., 1997) recognition of factors found to influence student selection of a host country. They acknowledged that the “knowledge and awareness” of the host country in the student’s home country had a direct influence on the availability of information related to the host country as a possible destination for overseas study. Also, part of this factor was the destination’s reputation for quality (Mazzarol et al., 1997). This theory also supports the data from Table 1 where 62.5% of respondents listed “positive reputation connected to my university” as an important factor when selecting which university to attend.

Another key factor in choosing to study in Japan is the “availability of financial aid and/or scholarships”, where 56.3% of respondents chose this variable as “important”. This factor is related to cost, another key factor identified by (Mazzarol et al., 1997). In addition, specific courses offered throughout the G30 universities seem to be somewhat appealing to international students. 52.1% selected “opportunity to pursue a career in my field of interest” as “important”.

As outlined by MEXT in the 5-point framework for establishing measures to successfully implement the “300,0000 International Student Plan”, the underlining reasons behind the G30 program are to internationalize higher education in Japan or “promote the globalization of universities” (MEXT, 2009). The thirteen universities chosen, as G30 institutions were to “increase courses taught in English. For Japanese universities to attract quality students, “raising the quality of educational and research in universities has become the most important factor in attracting high-caliber foreign students” (Kitayama, 2003, p. 72). As the Japanese language is of little use outside of Japan, the most effective approach to attracting foreign students was to offer full-degree programs in English. This was a means of attracting high-achieving international students “who otherwise would not have considered studying in Japan (Tsuneyoshi, 2005, p.??) The data represented in Table 2 clearly shows the importance of offering English degree programs. 65.6% of respondents reported that the “ability to study in English while living in Japan” was a major pull factor in decided to study in Japan. Only 6.3% of respondents list this reason as “not important”. English, as pull factor, and as the global language, is essential in attracting more international students, increasing the diversity on campus, and to international the domestic students (de Wit, 2005; Wachter, 2005).
Conclusion

The purpose of the research paper has been to analyze the G30 Project. Japanese university internationalization policies have evolved in order to attract more international students. However, it is still too early to declare if Japan’s recent policies of attracting more foreign students have been successful. In order for Japan to capitalize on the achievements made in the G30 program, recruitment efforts need to be expanded in Asia and throughout the world. Universities in the G30 program aiming to increase the amount of foreign students to 300,000 by 2020, need to realize the strengths of the program in order to market them more successfully. This study indicated the most important factors students consider in selecting a host country are specific majors offered, the excellent reputation of the select universities and the availability of obtaining a university degree in specific course content in English. Referring to Mazaarol and Soutar (2002) and the “push” and “pull” factors that greatly affect the movement of international students across global borders, Japan universities and the administrators who dictate policy can work toward improving already existing positive “pull” factors while working toward enhancing further “pull” factors to attract more high-quality international students to Japan.
References


Knight, Five myths about internationalization. *International Higher Education (62), 14-15, 2011*


doi:10.1080/09555803.2010.488948
Investigating Difficulties of Learning Computer Programming in Saudi Arabia

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Abstract— Learning computer programming is one of the main requirements of many educational study plans in higher education. Research has shown that many students face difficulties acquiring reasonable programming skills during their first year of college. In Saudi Arabia, there are twenty-three state-owned universities scattered around the country that provide free college education for Saudi students. Through a quick glance at the website of these universities, we found out that almost all of them offer the same course description and requirements for the computer-programming course. The poor performance of students in these programming courses, however, is always a hot topic during educational gathering held on the country, where it is always mentioned that students’ performances differ from a university to another and between different regions of the country. The main objective of this research is to investigate the reasons behind the major discrepancies in the performance students in computer programming course in three main regions of Saudi Arabia: East, West and North. For the purpose of this research, we will start by designing a questionnaire to be filled by a random sample students from each region determined for this study. The questions on this questionnaire are related to the socio-economic indices, learning environments indices, and the quality of teaching offered index. The results of the filled questionnaires will be analyzed and the results will reported in this paper.

Keywords—computer programming; learning difficulties; socio-economic indices

I. INTRODUCTION

Learning computer programming is one of the main requirements of many educational study plans in higher education [1]. Research has shown that many students face difficulties acquiring reasonable programming skills during their first year of college [2]-[4], and that learning computer programming is very complicated for many students at the first year of college [5].

Computer programming is difficult because students struggle to capture the required abstract concepts that are necessary to a program construction. The main source of difficulty does not appear to be the syntax or understanding of concepts but rather basic program’s planning [6]. Research shows that introductory programming courses have a relatively high fail rate. For example, Hagan in [7] states that programming was considered to be the most difficult and least interesting subject by most first-year students in all computing courses. Additionally, many institutes report dropout rates of 20-40 percent [8]-[14]. Because of the importance of computer programming and the difficulties faced by the college students, this topic has been investigated by many authors, e.g., [15]-[27].

In Saudi Arabia, there are twenty-three state-owned universities scattered around the country that provide free college education for Saudi students. Through a quick glance at the website of these universities, we found out that almost all of them offer the same course description and requirements for the computer-programming course. The poor performance of students in these programming courses, however, is always a hot topic during educational gathering held on the country, where it is always mentioned that students’ performances differ from a university to another and between different regions of the country. The main objective of this research is to investigate the reasons behind the major discrepancies in the performance students in computer programming course in three main regions of Saudi Arabia: East, West and North. For the purpose of this research, we will start by designing a questionnaire to be filled by a random sample students from each region determined for this study. The questions on this questionnaire are related to the socio-economic indices, learning environments indices, and the quality of teaching offered index. The results of the filled questionnaires will be analyzed and the results will reported in this paper.

The rest of this paper is organized as follows. In Section II, we provide a background and our motivation for the research. Section III discusses the survey used in this study. The result of the survey is presented and analyzed in Section IV. Our conclusions and future work is discussed in Section VI. Appendix I shows the survey used for the purpose of this research.

II. BACKGROUND AND MOTIVATION

Saudi Arabia is an oil rich third world country which is located in the southwest corner of Asia [24, 25]. According to 2010 statistics, the population of the country is approximately 27 millions [24]. Out of this twenty seven millions approximately 19 millions are Saudis and the rest are foreign workers. The area of Saudi Arabia is approximately 2, 150, 000 square kilometers. The country is divided into five main regions: Eastern Region (ER), Western Region (WR), Central Region (CR), Northern Region (NR), and Southern Region (SR). The capital of Saudi Arabia, Riyadh, is located in the central region and the
In this survey, shown in Appendix I, there are a total of 30 questions which are distributed among different socio-economic and learning environments indices that we chose to measure in this study. The main indices of the survey are shown in Table I.

<table>
<thead>
<tr>
<th>No.</th>
<th>Index</th>
<th>Questions</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Socio-Economic</td>
<td>1-17</td>
</tr>
<tr>
<td>2</td>
<td>Learning Environment</td>
<td>18-30</td>
</tr>
</tbody>
</table>

IV. ANALYSIS OF SURVEY RESULTS

This section presents the survey results obtained after analyzing all of the 90 copies of the survey which were filled properly. For our analysis, we have used the SPSS statistical package, and employed descriptive analyses tools to obtain the following three main indicators: (1) Frequencies and Percentages, (2) Mean Values, and (3) Standard Deviations. Form the results of this survey, shown in Table II, we can deduce the following factors that might impact the learning of computer programming.

Some factors that may have positive impact on the ability of students to learn computer programming are:
1) The desire of students to use computers in the first place.
2) The ability of parents to use computers.
3) The importance of having a computer at the house for doing homework.
4) The importance of penalizing students for not doing homework.
5) Giving enough homework to cover all the topics of the course.
6) The importance of providing students with his own space to study at the house.
7) Instructor’s ability to make the lecture more interesting and interactive.
8) The ability of instructors to solve working examples with students during lectures.
9) The importance of providing students with assistance during lab hours by their lab’s instructor.
10) Giving enough homework to cover all the topics of the course.
11) The importance of having a computer at the house for doing homework.
12) The level of education of the father.
13) The importance of penalizing students for not doing their homework.

Some factors that may have negative impact on the ability of students to learn computer programming are:
1) Not spending enough lab hours by students to practice and do their homework.
2) Instructor’s dullness during lectures and inability to draw student’s attention during lectures.
3) Living with friends may distract students from doing homework.
## Table II. The Results of the Survey

<table>
<thead>
<tr>
<th>Question No.</th>
<th>Question Text</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Scio-Economic</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| 1 | What is your region:  
   - Central Region  
   - Western Region  
   - Northern Region | 30 | 30% |
| 2 | What is your age?  
   - In the range of 19-23  
   - In the range of 24-28  
   - In the range of 29-32  
   - More than 32 | 80 | 89% |
| 3 | Where do you live?  
   - In the dormitory  
   - With my parents  
   - With my friends  
   - I live alone | 13 | 14% |
| 4 | Who is supporting you financially?  
   - My father  
   - My mother  
   - My relatives  
   - I support myself | 85 | 94% |
| 5 | Are both of your parents alive?  
   - Yes  
   - No | 80 | 89% |
| 6 | Are your parents divorced?  
   - Yes  
   - No | 7 | 8% |
| 7 | What is your father’s education?  
   - Ph.D. degree  
   - Master degree  
   - College degree  
   - High school degree  
   - Below high school | 9 | 10% |
| 8 | What is the nature of your father’s job?  
   - Government civil employee  
   - Government military employee  
   - Government police employee  
   - Private sector employee  
   - Self-employed | 31 | 34% |
| 9 | What is the monthly income of your father?  
   - 10,000 S.R. or More  
   - 8000 S.R.  
   - 5000 S.R.  
   - Less than 5000 S.R. | 51 | 57% |
| 10 | What is your mother’s education?  
   - Ph.D. degree  
   - Master degree  
   - College degree  
   - High school degree  
   - Below high school | 0 | 0% |
| 11 | Is your mother employed?  
   - Yes | 15 | 17% |
<table>
<thead>
<tr>
<th></th>
<th>Question</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
<td>Does either of your parents know how to use a computer?</td>
<td>62</td>
<td>28</td>
</tr>
<tr>
<td>13</td>
<td>Do you have a computer at your house?</td>
<td>43</td>
<td>47</td>
</tr>
<tr>
<td>14</td>
<td>How often do your parents ask about your school’s work?</td>
<td>2</td>
<td>12</td>
</tr>
<tr>
<td>15</td>
<td>Does either of your parents know computer programming?</td>
<td>3</td>
<td>87</td>
</tr>
<tr>
<td>16</td>
<td>Do you have your own and private space to study at your house?</td>
<td>23</td>
<td>67</td>
</tr>
<tr>
<td>17</td>
<td>Do you like to use computers?</td>
<td>39</td>
<td>51</td>
</tr>
<tr>
<td>18</td>
<td>How would you rate your instructor’s lectures?</td>
<td>2</td>
<td>9</td>
</tr>
<tr>
<td>19</td>
<td>How would you rate your understating of the subject after each lecture?</td>
<td>1</td>
<td>7</td>
</tr>
<tr>
<td>20</td>
<td>Does your instructor interact with students during his lecture?</td>
<td>0</td>
<td>22</td>
</tr>
<tr>
<td>21</td>
<td>Does your instructor solve with you working examples during the lecture?</td>
<td>17</td>
<td>73</td>
</tr>
<tr>
<td>22</td>
<td>Does your instructor give you homework after each new topic?</td>
<td>8</td>
<td>82</td>
</tr>
<tr>
<td>23</td>
<td>Does your instructor penalize your for not doing your homework?</td>
<td>38</td>
<td>52</td>
</tr>
<tr>
<td>24</td>
<td>Does your instructor solve all homework with you?</td>
<td>16</td>
<td>74</td>
</tr>
<tr>
<td>25</td>
<td>How would you rate the benefits of your computer lab for this course?</td>
<td>9</td>
<td>33</td>
</tr>
<tr>
<td>26</td>
<td>How often do you go to the computer’s lab?</td>
<td>36</td>
<td></td>
</tr>
</tbody>
</table>

**Learning Environment**

<table>
<thead>
<tr>
<th></th>
<th>How often do you go to the computer’s lab?</th>
<th>2 hours weekly</th>
</tr>
</thead>
<tbody>
<tr>
<td>26</td>
<td></td>
<td>36</td>
</tr>
</tbody>
</table>
The inability of both parents to know how to use computers.
5) Not having a computer in the house to help in doing homework and practice more.
6) The lack of knowledge of parents about computer programming

Some factors that have no or very little impact on the ability of students to learn computer programming are:
1) The monthly income of the father.
2) Whether the parents are divorced or not.
3) Whether the mother is employed or not.
4) The age of the student.

V. CONCLUSIONS AND FUTURE WORK

In this paper, we presented the results of a study that have been conducted to investigate some factors that may impact learning of computer programming in Saudi Arabia. For the purpose of this research, a survey was designed and the result of this survey was presented and analyzed. In this research, the survey concentrated only on three regions of the country. For our future work, we intend to perform more surveys in different regions of the country and to compare their results with results obtained by this study.

REFERENCES


**Appendix I: The Survey**

Dear Student:
This survey is designed to investigate the discrepancies in the learning outcomes of learning computer programming among students from different regions in Saudi Arabia. Please answer all questions as directed by each question.

<table>
<thead>
<tr>
<th>Question No.</th>
<th>Question Text</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td><strong>Scio-Economic</strong> What is your region:</td>
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<tr>
<td></td>
<td>o Central Region</td>
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<tr>
<td></td>
<td>o Western Region</td>
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<td></td>
<td>o Northern Region</td>
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<tr>
<td>2</td>
<td>What is your age?</td>
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<td></td>
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<td></td>
<td>o In the range of 24-28</td>
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<td></td>
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<tr>
<td></td>
<td>o More than 32</td>
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<td>Where do you live?</td>
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<td>Who is supporting you financially?</td>
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<td></td>
<td>o My father</td>
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<td>o My mother</td>
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<td></td>
<td>o My relatives</td>
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<td></td>
<td>o I support my self</td>
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<td>5</td>
<td>Are both of your parents alive?</td>
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<td>o Yes</td>
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<td></td>
<td>o No</td>
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<tr>
<td>6</td>
<td>Are your parents divorced?</td>
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<td></td>
<td>o Yes</td>
</tr>
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<td></td>
<td>o No</td>
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<tr>
<td>7</td>
<td>What is your father’s education?</td>
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<td>o Ph.D. degree</td>
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<td></td>
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<tr>
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<td>What is your mother’s education?</td>
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<tr>
<td>11</td>
<td>Is your mother employed?</td>
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<tr>
<td>12</td>
<td>Does either of your parents know how to use a computer?</td>
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<tr>
<td></td>
<td>Yes</td>
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<tr>
<td></td>
<td>No</td>
</tr>
<tr>
<td>13</td>
<td>Do you have a computer at your house?</td>
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</tr>
<tr>
<td></td>
<td>No</td>
</tr>
<tr>
<td>14</td>
<td>How often do your parents ask about your school’s work?</td>
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<tr>
<td></td>
<td>Daily</td>
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<td></td>
<td>Weekly</td>
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<td></td>
<td>Monthly</td>
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<tr>
<td></td>
<td>Not at all</td>
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<tr>
<td>15</td>
<td>Does either of your parents know computer programming?</td>
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<td></td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>No</td>
</tr>
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<td>16</td>
<td>Do you have your own and private space to study at your house?</td>
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<td>No</td>
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<td>17</td>
<td>Do you like to use computers?</td>
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<td></td>
<td>Yes</td>
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<td></td>
<td>No</td>
</tr>
</tbody>
</table>

### Learning Environment

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
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<tbody>
<tr>
<td>18</td>
<td>How would you rate your instructor’s lectures?</td>
</tr>
<tr>
<td></td>
<td>Excellent</td>
</tr>
<tr>
<td></td>
<td>Very good</td>
</tr>
<tr>
<td></td>
<td>Good</td>
</tr>
<tr>
<td></td>
<td>Poor</td>
</tr>
<tr>
<td>19</td>
<td>How would you rate your understating of the subject after each lecture?</td>
</tr>
<tr>
<td></td>
<td>Excellent</td>
</tr>
<tr>
<td></td>
<td>Very good</td>
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<td>Good</td>
</tr>
<tr>
<td></td>
<td>Poor</td>
</tr>
<tr>
<td>20</td>
<td>Does your instructor interact with students during his lecture?</td>
</tr>
<tr>
<td></td>
<td>Always</td>
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<td></td>
<td>Sometimes</td>
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<td>Never</td>
</tr>
<tr>
<td>21</td>
<td>Does your instructor solve with you working examples during the lecture?</td>
</tr>
<tr>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>No</td>
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<td>22</td>
<td>Does your instructor give you homework after each new topic?</td>
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<tr>
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<td>Yes</td>
</tr>
<tr>
<td></td>
<td>No</td>
</tr>
<tr>
<td>23</td>
<td>Does your instructor penalize your for not doing your homework?</td>
</tr>
<tr>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>No</td>
</tr>
<tr>
<td>24</td>
<td>Does your instructor solve all homework with you?</td>
</tr>
<tr>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>No</td>
</tr>
<tr>
<td>25</td>
<td>How would you rate the benefits of your computer lab for this course?</td>
</tr>
<tr>
<td></td>
<td>Very helpful</td>
</tr>
<tr>
<td></td>
<td>Helpful</td>
</tr>
<tr>
<td></td>
<td>Question</td>
</tr>
<tr>
<td>---</td>
<td>--------------------------------------------------------------------------</td>
</tr>
<tr>
<td>26</td>
<td>How often do you go to the computer’s lab?</td>
</tr>
<tr>
<td>27</td>
<td>Do you get any assistance from your lab’s instructor?</td>
</tr>
<tr>
<td>28</td>
<td>Do you have access to the computer lab all the times?</td>
</tr>
<tr>
<td>29</td>
<td>Does your school have enough resources for this course in the library?</td>
</tr>
<tr>
<td>30</td>
<td>Do you feel that your learning environment is suitable and maintained properly?</td>
</tr>
</tbody>
</table>
1. Title of the submission. The use of an online social bookmarking tool for stimulating critical analysis and facilitating assessment as part of a university course on climate change

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6. Abstract.

An important learning objective for a final year University course called "Living with Climate Change" was to engender critical analysis skills in the students around the issues of media representation of the science of climate change. To facilitate this, students were required to curate an eportfolio where they accumulated bookmarks using Livebinder and importantly add short descriptions and analyses of their content. They have to think critically about each site and articulate how the site has represented the science. As they look for and accumulate bookmarks, they develop gain an appreciation of good and bad sites, sites that misrepresent the issues or mislead the reader, sites that are clear or confusing and sites that are biased or balanced. The activity encourages critical analysis within a self-directed, self-motivated learning experience and encourages students to apply their subject-specific knowledge. It also encourages them to curate and evaluate the flood of information that is available online. It is also part of the coursework assessment. The students send the lecturer a link to their individual eportfolio via Blackboard. The lecturer then uses a set of pre-agreed criteria to assess the eportfolio online via Blackboard and to provide feedback. In a survey 79% of students found the eportfolio Livebinder exercise ‘useful’ and ‘engaging’ and 83% considered it an appropriate mode of assessment.
1) Title of the Submission: Career Planning Integration with Language Arts, Social Studies, Art, and Health and Life Skills at the Grade 1 & 2 Level in New Zealand

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Career Planning Integration with Language Arts, Social Studies, Art, and Health and Life Skills at the Grade 1 & 2 Level in New Zealand

Abstract

With the use of both quantitative and qualitative data, this article presents on the effectiveness of having students in a grade 1/2 split class participate in a career planning unit consisting of various learning activities. This unit integrated not only some of the Alberta Education Curriculum outcomes from: Language Arts, Social Studies, Art, and Health and Life Skills, but also some of the outcomes of the New Zealand curriculum for Reading, Writing, Listening, Viewing, Personal Health and Physical Development. The presented career planning unit is outlined with clear explanations of the activities in which the students participated. Resources and templates that were used for evaluation purposes are also included. This career planning unit was delivered to a grade 1/2 split class in an urban area in New Zealand, consisting of 27 students from very diverse cultural backgrounds. Objectives of the unit were met with 85% of the students noting that this unit made them excited about what they could do with their life, 73% reporting that this unit helped them to learn more about themselves and increased their interest in learning more about different careers and 58% indicating that they learned a lot about careers.
This career planning unit was established to be successful at a grade 1/2 level by allowing students to engage in activities that developed student awareness of self, by discovering their unique interests, values, beliefs and skills. Further research in the area of elementary career/life interventions should be conducted to contribute to the knowledge and research in this field.

**Introduction**

Career education is often geared towards students in middle school and high school, as this is the time when many students usually begin to think about and prepare for their future. Career education can and should be implemented much earlier on in a child’s education than what typically occurs. If students start thinking about their interests, values, beliefs and skills earlier in life it is easier for them to make informed decisions about potential career choices. Informed career choices should be based on what is important and meaningful to a person. If students are taught to recognize what is important and meaningful to them as individuals, they will be equipped to make choices that reflect their beliefs and values throughout their lives. As a result, these students will be happier and enjoy the work they do and the lives that they live.

The world is rapidly changing and children must prepare for a world full of unknown possibilities. Teachers often refer to the students they teach as 21st century learners, and discuss with students what it means to be growing up in a world that is constantly changing. Incorporating career education within the regular curriculum can help prepare students for the
flexibility of the world in which they will grow up. Magnuson and Starr (2000) restated this point, that life is full of unexpected twists, that demand skilful planning and decision making abilities. The skill of being able to make appropriate decisions is not limited to adulthood, but is one that must be taught throughout childhood as the acquisition and application of the sub-skills necessary to make informed life/career decisions is developmental (Magnuson and Starr, 2000). One thing teachers can do is to encourage students to think about their goals, ambitions, dreams and career possibilities from the time they begin their school careers. Thus, enhancing the student’s self-awareness and creating the opportunity to explore what is personally meaningful to them as individuals.

This career unit plan encouraged grade 1 & 2 students to think about their personal interests through a variety of activities. Through these activities students discovered who they were as individuals, their likes and dislikes. Students recorded what they learned about themselves in a personal book. There is no doubt that likes and dislikes will change throughout out their lives, but often what is meaningful to them will remain consistent. Creating meaning for students also creates an intrinsic motivation for students to succeed. Palladino-Schultheiss (2005) emphasized the importance of early career interventions (activities) within the elementary school setting, stating that broadening educational goals beyond traditional subjects in an environment that nurtures and develops intrinsic motivation will promote independent self-determined behaviours. As students age and make decisions about what to do with their lives, and they have been taught to utilize what is meaningful to them while making those decisions, they will be motivated to be successful and to achieve their goals. This paper will outline one way that teachers may incorporate the aforementioned skills and behaviours into a career planning unit for early elementary students. This particular career planning unit integrates career/life planning
activities into the curriculum of a grade 1/2 split class.

**Context of Teaching Environment**

**School Environment**

The beautiful country of New Zealand is located in the south-western Pacific Ocean and is divided into two islands: North and South. The school in which this career planning unit was implemented was located in an urban center with a population of about 1.25 million people. The city itself is separated into different regions due to its size. This particular school was an elementary school that consisted of classes from Kindergarten to grade seven.

**Classroom Environment**

The classroom in which the career planning unit was implemented was a grade 1/2 split class. Within this school there were three grade 1 classes and two grade 2 classes. Since this particular class was mostly grade 2 students, they would often work with the other grade 2 classes. In the New Zealand education system much of the teaching is differentiated instruction. For subjects like Reading and Math students are broken into small teaching groups. These groups are determined by each individual student’s ability and needs as determined through testing and assessment. Most lessons start out with instruction to the whole class on the carpet, and then students are assigned more individualized tasks. While students are completing independent tasks, the educator teaches to a small group of students at a time. The differentiated instruction to small groups lends itself well to teaching a split class. Most mornings during Reading and Writing there was a teachers’ assistant in the room to help support all of the learners. During Reading, the teachers’ assistant would listen to individual readers and occasionally work with reading groups. During Writing, she would circulate around the room and assist students with
their writing tasks.

The classroom was made up of twenty-seven students (14 boys and 13 girls) with an approximate age range of 6.1 to 7.8 years. There was a lot of cultural diversity within the classroom with students identify with the following ethnic groups: 13 European, 2 Maori, 3 Korean, 1 Filipino, 1 Cook Island Maori, 1 East Indian, 2 Chinese, 1 African 1 Middle Eastern and 2 other. The cultural background(s) that students identify with can play an important role in the students learning. Culture can influence students’ choices with respect to jobs and may also impact how seriously they focus on their schoolwork. Some cultures exert a lot of pressure on students to do well, and choose professions that are considered to be successful.

Seven students in this classroom attended E.S.L. (English as a second language) classes once a week. E.S.L. students require special consideration as the language and meaning of words may be a barrier to their learning and understanding of the content presented to them. All of the E.S.L. students had average English speaking abilities. One of the E.S.L students also worked with a speak/language therapist once a week. There were four students with special abilities and eight students with special needs in this 1/2 split class. All of the students were capable of completing the activities within the career planning unit entitled, “All About Me”. Only one of the students required extra help when completing some of the written components.

In New Zealand, schools are rated by decile, which reflects economic and social factors of the community surrounding it, ten being the highest rating. This particular school had a decile rating of 9. The majority of the students were from middle to upper middle class families. Many of the students participated in extracurricular activities such as piano, dance lessons and rugby.

**Integrated Curriculum**

The original context for the career planning unit “All About Me,” was based on the
Alberta (Canada) Program of Studies for grade two English Language Arts, Health and Life Skills and Art. The career planning unit fits into the English Language Arts curriculum because students express and represent feelings and ideas as a result of completing career planning activities. The students used various forms of media to communicate their feelings and ideas. Some of the media that students used throughout this unit included drawing and finger painting. By representing their ideas and feelings in this manner they also be achieved Art expression learning objectives. These activities allowed students to explore their interests, talents and abilities. Exploring talents, abilities and setting goals also meets objectives from the Health and Life Skills curriculum.

At the school in New Zealand the career planning unit was incorporated into the New Zealand curriculum for Reading, Writing, Listening, Viewing and Personal Health and Physical Development. There are many similarities between general learning outcomes in the Alberta and New Zealand curricula. By incorporating literature and shared reading into the activities students interacted with the six strands of Language Arts: Reading, Writing, Speaking, Listening, Viewing and Representing. These six strands of Language Arts are features of both the Alberta and New Zealand curricula. Reading to students was also used throughout the unit, and shared reading was one of the two approaches to reading outlined by the New Zealand Ministry of Education.

Career Development Rationale

The career planning unit, “All About Me”, addressed the career development needs of the students by getting them on the right path to making meaningful decisions about life and future career choices. Through this unit, students discovered that they were unique and what they liked to do to reflect that uniqueness. By getting to know themselves better and discovering likes,
dislikes and talents they were able to make meaningful connections throughout different aspects of their lives. When students know what is important and meaningful to them they are able to make decisions with greater ease and better confidence. Grade 1 and 2 is just the beginning for these young students, they will continue to grow and learn more about themselves as they mature into adults. To build upon a stable understanding of themselves at such a young age creates a concrete base on which they can build their future selves, with meaning being at the centre of the structure.

Learning Outcomes

Alberta Curriculum Outcomes

Through the completion of the various activities in the career planning unit the grade 1 and 2 students met the following learning outcomes from the Alberta Programs of Study for English Language Arts, Health and Life Skills and Art. The particular outcomes achieved with this career planning unit are:

*English Language Arts:*

1.1 Discover and Explore

- Express ideas and develop understanding;
- Express or represent ideas and feelings resulting from activities or experiences with oral, print and other media text;
- Experiment with language and form; and
- Use a variety of forms of oral, print and other media texts to organize and give meaning to experiences, ideas and information. (Alberta Learning, 2000)
**Health and Life Skills:**

Group Roles and Processes

R–2.8 recognize and value strengths and talents that members bring to a group; e.g., identify skills each member can offer;

Learning Strategies

L–2.4 recognize that it takes time and effort to accomplish goals;

Life Roles and Career Development

L–2.5 recognize, acknowledge and respect that individuals have similar and different interests, strengths and skills each member can offer (Alberta Learning, 2002).

**Art:**

PURPOSE 1: Students will record or document activities, people and discoveries.

Concepts:

A. Everyday activities can be documented visually.

B. Special events, such as field trips, visits and festive occasions can be recorded visually.

C. Family groups and people relationships can be recorded visually.

D. Knowledge gained from study or experimentation can be recorded visually.

PURPOSE 2: Students will illustrate or tell a story.

Concepts:
A. A narrative can be retold or interpreted visually.

B. An original story can be created visually (Alberta Education, 1985).

New Zealand National Standards

The learning purposes and key characteristics that were achieved as outlined by the New Zealand National Standards for Reading, Writing, Listening, Viewing Personal Health and Physical Development are as follows:

**Reading:**

- Use punctuation such as full stops, commas, etc. to assist students in constructing meaning from the text and to enable a smooth and fluent reading style;
- Listen to stories;
- Read and respond to stories; and to
- Think critically about texts (Ministry of Education, 2009).

**Writing:**

- Plan their writing by using words or pictures;
- Be able to listen and follow instructions;
- Think about, record and relate their experiences/ideas in writing; and
- Identify and discuss similarities and differences between written work (Ministry of Education, 2009).

**Personal Health and Physical Development:**

Personal Identity

- Identify personal qualities that contribute to a sense of self-worth.
Relationships with Other People - Identity, Sensitivity, and Respect

- Describe how individuals and groups share characteristics and are also unique (Ministry of Education, 2007).

Key Competencies:

- Think carefully about their learning;
- Think about what they have heard/seen;
- Respond appropriately to what they have heard/seen (Ministry of Education, 2007).

Description of Unit Plan

The “All About Me” career planning unit consists of a series of activities and exercises that assist students in learning about themselves and their classmates. Career planning activity outcomes are to allow students to discover what their likes, dislikes, values, favourite activities and goals are. Through the activities in this unit students will showcase what they learn about themselves and who they are by creating a book entitled “All About Me”. The “All About Me” book is a compilation of the assignments and activities completed throughout the career planning unit.

In New Zealand the teachers are continuously assessing their students’ abilities as a way to gauge where students are at and allow them to effectively focus and drive their lesson planning. This testing is especially heavy at the beginning of a new school year as it is used to help place students into appropriate reading and math groups. As a result, the career planning lessons were not taught at a set time every week. The career planning unit was divided into six activities. These activities were placed into the schedule whenever possible. The idea behind the
career planning unit was to assist students in learning about themselves and thus equip them for making meaningful life choices. A detailed outline of each of the activities within the unit is now described.

**Activity 1 - All About Me**

In the first activity the career planning unit was introduced to the class. The teacher introduced themselves to the class, as it was the first week of school. The introduction included a PowerPoint presentation with pictures of the teacher, her family and things that were important to her. The teacher then proceeded to share some of her interests and hobbies with the class. It was then explained to the students that the teacher wanted to learn more about each of them and that they were going to make a book all about themselves. When they were done making the book they could share it with their parents, friends and with a peer in a buddy class (when this class would work with another class in the school).

Each student was then asked to start creating the cover for his or her book with the title “All About Me” on the front (see Appendix A for the template used). Small groups of students were taken outside the room to have their photo taken. Each student was allowed to chose where they would like their picture taken so that it was representative of something they enjoyed doing, like being on the slide or a place in the school they liked to spend time. The students then glued their picture onto the covers of their books. It took some of the student’s more than one lesson to finish their title page. The covers of the books were laminated to protect the pictures and to make the books more durable. The students were then asked to fill out an information sheet that included things like their birthdate, family information and a description of something that was special to them (see Appendix B for the template used).

**Activity 2 - I am Unique**
It was explained to the students that in this lesson they would learn how they are all unique from one another, and would be allowed to explore the process for discovering their individual talents. The class then read the story, *The Shape of Me & Other Stuff*, by Dr. Seuss (1997) (see Appendix H for the resources used). The story was made into a PowerPoint to ensure that all of the students were able to see it on the screen at the front of the classroom. The students read the story together as a class from the screen. This Dr. Seuss story is a brightly coloured book that introduces the concept of shapes through the use of pictures and whimsical text, for example “the shape of you, the shape of me”. This story was used during shared reading each day throughout the week. During Reading the class also read a shared poem called, *Only One Me*, by Jill Eggleton (n.d.) (see Appendix D and H for the resource used) to reinforce the idea that they are all unique. In both the story and poem the class focused their attention to the punctuation used and how it was used. The class practiced reading with expression and ensured that they always stopped at periods and paused for commas.

The teacher then explained to the class that we are all unique and led a discussion about what it meant to be unique, different or special. The students participated in a think, share, pair with a partner about how they were unique. Some of the students were given an opportunity to share with the entire class how they were unique. Students then wrote about how they were unique (see Appendix C for the template used) and decorated an egg using their fingers. Students took turns finger painting and decorating their eggs at the back of the room, while others continued to work on their writing assignment. The purpose of the egg activity was to show students in another medium how they are unique from one another. The class discussed how there are no two fingerprints alike; they are unique to each and every person.

**Activity #3 - I Want to Learn!**
This lesson encouraged and helped students to recognize the individual skills that they have. Students were then asked to think about and discuss things that they want to learn to do. This prepared students for setting goals in the future. It was explained to the class that in order to set goals they needed to think about what they can do and what they cannot yet do. This helped students realize what they would like to accomplish.

The lesson started with shared reading. First the teacher read two different “I Can” poems to the students. The class then read the poems together aloud. They were then instructed to pay attention to the punctuation in the poems. Reading aloud allows the students to practice their oral reading skills. After reading the poems students were asked to think, pair, share something that they can do and something that they would like to learn. The students were then given a poem template (see Appendix E for the template used). They were asked to complete the poem by filling in what they could do and what they want to learn to do. The teacher modeled how to create the poem with the template before the students started working on their poems. In modeling the teacher shared with the class some things that she could do, for example drive a car, and things she could not do like surf, which she would like to learn to do.

**Activity 4 - Leo the Late Bloomer**

In this lesson the theme “I can” will be carried over from the previous lesson. Students discovered that acquiring new skills requires time, interest and growth. The class was read the story, *Leo The Late Bloomer*, by Robert Kraus (1994) (see Appendix H for the resources used). This story was about a tiger named Leo who was not yet reading, writing, drawing or talking. Leo’s father was concerned that Leo was not doing things that others were, but Leo’s mother was not worried because she knew her son would do all those things, and more when he was ready to do so. A PowerPoint of the story was created and used during shared reading for the rest of the
week. After the story was read the students were asked two questions:

- Have you ever felt like Leo?
- What did you learn from the story?

Students were reminded of the last discussion they had about what they could do. This time they were asked to think about something that they had just recently learned to do or could not do last year. Students were asked to recall how they were finally able to do the new task and how they acquired the skill(s) needed to master that new task.

**Activity 5 - When I Grow Up**

In this lesson students explored careers and drew a picture of themselves at their dream job. The lesson began with the students gathering on the carpet where they discussed different types of jobs. The discussion was based around the following four questions:

- Do your parents work?
- What do they work at?
- What do they do at their job?
- What types of jobs can you name?

The students shared where their parents worked, what they did and listed some of the other jobs that they knew of. As a class they then looked at various books from the class library about different types of careers. Students were then asked to close their eyes and visualize themselves at their dream job, something that they really wanted to do in the future. Then they were also asked if it were possible that they could have more then one dream job? It was explained to them that they could have more then one dream job but, they were asked to pick just one for this activity. The class was then given a large piece of white paper on which they drew and wrote about themselves at their envisioned dream job.
Activity 6 - My Special Day

The My Special Day activity taught the students how visualization could be a valuable tool. Space was created for the students to lie down on the floor if they chose to do so. Students were also asked to close their eyes, keep there hands to themselves and listen carefully to the teachers voice. The teacher then proceeded to read a guided fantasy script entitled, *My Special Day*, (see Appendix F for the script used) students visualized what they would do if they could do anything they wanted on a special day off from school. Once the script was read, students were instructed to slowly and quietly sit up and open their eyes. Before they were asked to come to the carpet to listen and visualize, they had been given a paper with a space to draw a picture and write on (see Appendix G for the template used). After the visualization was complete they were directed to quickly go back to their desk and get to work writing and drawing about what they had visualized. Students were free to decide if they were going to draw or write first. The objective was for the students to be able to depict what they had visualized in a way that was easy for them.

After the students had completed their worksheet about what they had visualized, they were asked back to the carpet. The teacher then read the book, *Oh the Places You will Go*, by Dr. Seuss (1990) (see Appendix H for the resources used). This particular story was read as a way to wrap up the career planning unit. This book was chosen because of the message it gave students, which was that they were smart, had the ability do anything they wanted and to accomplish a lot in their lifetimes. The message of the story was discovered and discussed with the students and they were told that the teacher believed in them.

Evaluating Effectiveness

The effectiveness of the career planning unit and activities was mostly done through
observations while circulating through the classroom. As the students worked on their tasks the teacher walked around and discussed with the students the work that they were doing. If they were struggling with getting started, the teacher would question them about what were doing, how they were feeling about the activity, and if necessary provide them with extra examples to assist with clarification. For a quantitative evaluation of the effectiveness of the career planning unit the Career Coaching Across the Curriculum: Evaluation Form was utilized after the unit was completed (see Appendix I for the form used). This evaluation form provided valuable feedback regarding the effectiveness of the unit.

**Description of Data Collected**

Over the course of the career planning unit students participated in six different activities. Most of these activities were implemented in a class once a week. On average 93% of the students completed all six of the activities within the unit. Two students did not complete the All About Me and I Want to Learn activities, where as three students did not complete the I Am Unique activity. The activity that most students did not complete was the Leo the Late Bloomer activity, in which 4 students did not participate due to school absences.

<table>
<thead>
<tr>
<th>Activity</th>
<th>I didn’t do it</th>
<th>I did it</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. All About Me</td>
<td>1 (4%)</td>
<td>26 (96%)</td>
</tr>
<tr>
<td>B. I am Unique</td>
<td>2 (7%)</td>
<td>25 (93%)</td>
</tr>
<tr>
<td>C. I Want to Learn</td>
<td>3 (11%)</td>
<td>24 (89%)</td>
</tr>
<tr>
<td>D. When I Grow Up</td>
<td>1 (4%)</td>
<td>26 (96%)</td>
</tr>
<tr>
<td>E. Leo the Late Bloomer</td>
<td>4 (15%)</td>
<td>23 (85%)</td>
</tr>
</tbody>
</table>
Table 2 illustrates how students ranked each activity. Students could choose one of three options, *Not Good at All, Good* or *Great*. Overall, 95% of the students indicated that the activities were either Good or Great. The most well received activities were the All About Me, When I Grow Up, Leo the Late Bloomer and My Special Day activities with 100% of the students indicating that they were either Good or Great. The entire class appeared to enjoy the book, *Leo the Late Bloomer*, and many indicated in writing that it was their favourite activity. It should be noted that the Leo the Late Bloomer activity was also the one in which 4 of the students were absent.

<table>
<thead>
<tr>
<th>Activity</th>
<th>Not good at all</th>
<th>Good</th>
<th>Great</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. All About Me</td>
<td>0 (0%)</td>
<td>4 (15%)</td>
<td>22 (85%)</td>
</tr>
<tr>
<td>B. I am Unique</td>
<td>1 (4%)</td>
<td>6 (24%)</td>
<td>18 (72%)</td>
</tr>
<tr>
<td>C. I Want to Learn</td>
<td>1 (4%)</td>
<td>4 (17%)</td>
<td>19 (79%)</td>
</tr>
<tr>
<td>D. When I Grow Up</td>
<td>0 (0%)</td>
<td>5 (19%)</td>
<td>21 (81%)</td>
</tr>
<tr>
<td>E. Leo the Late Bloomer</td>
<td>0 (0%)</td>
<td>7 (30%)</td>
<td>16 (70%)</td>
</tr>
<tr>
<td>F. My Special Day</td>
<td>0 (0%)</td>
<td>3 (11%)</td>
<td>24 (89%)</td>
</tr>
</tbody>
</table>

Note: 95% of students indicated that the activities were either Good or Great.

In the written component of the evaluation, approximately half of the students wrote something. It was a little difficult for them to follow the evaluation sheet and they were not sure what to write. This could have been complicated due to the fact that this unit was completed at the beginning of the school year and for many students they were just getting used to writing.
again. Some of the grade ones found it especially hard so the teachers scribed for a few of the students. A suggestion would be to work one on one with the students to fill in this written section of the evaluation to ensure completion. The two questions that students were asked to write about with respect to the unit were: What did you like about the Life Roles and Career Development unit? And how could this unit be made better?

The main theme from what the students liked about the unit was the drawing and colouring activities. They also indicated that they liked that the activities were all about them. Some students wrote about which particular activities they specifically liked, for example one students said they liked the visualization activity. As for how the unit could be improved, this section of the evaluation did not receive a lot of feedback from the students. It is possible that some of the students did not quite understand how to answer that question, or may have gotten mixed up. One of the students who did respond wrote, “Make a forest”. He may have been referring to the new field located beside the new gymnasium, which is something that was made better at the school, in his mind. A few students said “to make it (the unit) more fun” would be a way to make the unit better, where as another student suggested that “we play a game”. This was a great suggestion and should be taken into consideration when implementing this career plan again. Looking into games or making up a game that would be suitable for this unit as a way to incorporate career planning objectives into other curriculum areas would be a helpful addition to the unit, especially for younger students.

As can be seen in Table 3, 85% of the students indicated that the career planning unit made them excited about what they could do with their lives. On average 70% of the students indicated that they Agree that the career planning unit achieved all of its objectives, helped them to learn a lot about themselves and careers. In addition 70% Agreed that the unit made them
excited about what they could do with their lives.

It is evident that specific information about careers was the piece students indicated they were not as sure about, with only 58% indicating that the unit assisted them with learning a lot about careers. There could be a number of factors that could have influenced this outcome, such as: the age and developmental level of the grade one students, language barriers for ESL (English as a Second Language) students, as well as a cultural barriers between the students and the teacher. Sometimes, topics and or certain words were used in class discussions that the students would not understand. It should also be noted that one student was away the day that the class completed the information on Table 3, as a result the numbers and percentages are calculated out of 26 students.

Table 3

<table>
<thead>
<tr>
<th></th>
<th>I Don’t Agree</th>
<th>I’m Not Sure</th>
<th>I Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>This unit helped me to learn a lot about myself</td>
<td>0 (0%)</td>
<td>7 (27%)</td>
<td>19 (73%)</td>
</tr>
<tr>
<td>This unit helped me to learn a lot about careers</td>
<td>1 (4%)</td>
<td>10 (38%)</td>
<td>15 (58%)</td>
</tr>
<tr>
<td>This unit made me excited about what I could do with my life</td>
<td>0 (0%)</td>
<td>4 (15%)</td>
<td>22 (85%)</td>
</tr>
<tr>
<td>This unit made me want to learn more about different careers</td>
<td>2 (12%)</td>
<td>6 (23%)</td>
<td>17 (73%)</td>
</tr>
</tbody>
</table>

Note: On average 70% of the students indicated that they Agree all four objectives for this career planning unit were achieved.
Many of the students enjoyed the drawing and colouring parts of the activities; this potentially could be attributed to the age and developmental level of the students. For some students who did not have effective writing skills yet, especially the grade ones, found it easier to express themselves through drawing or the use of other mediums. The majority of this particular class enjoyed drawing and coloring and took a lot of pride in their work. Many also enjoyed getting their pictures taken for the cover of their books, and some even mentioned it on the evaluation form as their favourite part of the unit. Numerous students in the class enjoyed participating in activities that were about themselves. At this particular developmental level, being 6 and 7 year olds, they were still in a very egocentric developmental stage of their lives; this may be a contributing factor to the increased positive agreement with Self activities being rated higher than others. The majority of the students also enjoyed the visualization activity and this could be due to the fact that this activity was explained thoroughly, and the students had been prepared for it in manageable steps. A few weeks before the visualization activity the teacher began to ask the students to picture in their minds the stories that were being read to them, instead of them just looking at the pictures. Visualization allowed the students to use their already active imaginations as a tool with which they could better understand themselves. Breaking down the activity and introducing it slowly created a better sense of understanding for the students, and as a result it was very well received.

In this particular career planning unit there was not enough time dedicated to the discussion and exploration of specific careers. This was evident at the end of the career planning unit when the final summative evaluations were reviewed, as students were less likely to agree that the unit assisted them in learning a lot about careers. The reason this area was not covered as thoroughly in the unit was mainly due to the fact that the internship was international, and
there were some differences in how the mentor teacher perceived the career planning unit compared to the Education program in Alberta. Although, the mentor teacher was accommodating and allowed the integration of the career planning unit into the curriculum, there was a sense that more important curricula would take priority. This difference in priority created a time crunch throughout the career planning unit and it was not given as much classroom time as it was designed to have. However, this can be appreciated and understood as part of the international internship and the differences between the Alberta educational system and the educational system in New Zealand.

There are numerous small changes that could be made to improve each of the activities, but the most significant change would be to dedicate more class time to the unit. Devoting more time to the discussion and learning about different career paths would be a positive addition to the unit. Guest speakers could then be invited to come into the class to talk to the children about their different career areas. If available parents could be invited as guest speakers, as it is always special for students to have their parents visit their class.

Additionally, a class display wall could be created so that each student could exhibit the work they had completed during the career planning unit. This would allow for enhanced learning opportunities regarding the differences and uniqueness of each student in the class. Changing the final lesson and having students share and present what they have learned with the rest of the class would also be a positive and appropriate way to wrap up the unit.

**Implications of Unit Plan**

There were three main positive outcomes from the implementation of this career planning unit. The first outcome was that each child was able to recognize and identify that they were unique. This was a very significant realization for the students, to understand that they are unique
and special in their own way. This self-awareness can often increase the students’ self-confidence and potentially provide encouragement when they may be struggling with certain things in their lives. For example, a student may not do well in school, but may be extremely artistic, thus giving them something else to focus on and be proud of.

The second positive consequence of the career planning unit was that over 81% of the class agreed that the unit made them excited about what they could do with their lives. Young students should be exposed to various activities, such as the ones within this unit, to give them the tools to start thinking about their futures. By sparking this interest within themselves, discovering what is truly meaningful for them, allows them to make informed decisions regarding the choice of activities and classes they pursue throughout their personal and educational lives. The more informed and meaningful their decisions, the more satisfaction and success they will achieve throughout their lives.

The third positive result of the career planning unit was that it enhanced how the teacher was able to get to know the students better. Using the career planning unit at the beginning of the school year was a great way to introduce the students to the teacher and each other. Due to the size of this particular school, all of the students may not have all known each other before school started. Specifically, in this class the grade 1 student’s did not know some of the grade 2 students. This enhanced understanding of the students’ interests, passions and abilities created a great platform for the teacher to build future activities and lessons around. Teachers would be able to increase the meaning of future activities for the students and potentially increase success and engagement by doing so.

**Conclusions**

The Career Coaching Across the Curriculum pilot program at the University of
Lethbridge, created an opportunity to learn about career planning theory and skills and how to blend this knowledge into the teaching environment. Admittedly, there was some scepticism as to how well it could be implemented into an elementary classroom. After developing and implementing a career planning unit for a grade 1/2 split class successfully, the scepticism disappeared. The career planning unit was easy to implement in conjunction with the other school subjects, and with a little creativity on the part of the teacher, could be integrated with many other curricular objectives.

Overall the career planning unit was successful at the grade one and two levels, as many of the students responded that it had increased their excitement with respect to what they could do with their lives. This enthusiasm is particularly important for this young age of only 6 and 7 years old, as they are at the beginning of their lives’ path. The more determined they are to continue on a meaningful path at an early age, the more successful they will be throughout all of the endeavours of their life.
Appendix A

Title Page for “All About Me” books

All About Me

Insert Photo
Appendix B

Student information sheet

My Name is:____________________________________

I am ____________ year old

My Birthday is_______________________________________

I was born in________________________________________

My family members are_________________________________________________________

My favourite animal is a______________________________

Something that is very special to me is

______________________________________________________________________________
______________________________________________________________________________
______________________________________________________________________________
______________________________________________________________________________

When I grow up I want to ______________________________________________________
Appendix C

I am Unique

______________________________________________________________________________
______________________________________________________________________________
______________________________________________________________________________
______________________________________________________________________________
______________________________________________________________________________
______________________________________________________________________________
Appendix D.  “Only One Me” poem

Only One Me
There’s more than one bird,
There’s more than one bee,
But there’s only one sun,
One moon
And one ME

There’s more than one valley
There’s more than one tree
But there’s only one sun
One moon
And one ME

There’s more than one mountain
There’s more than one sea,
But there’s only one sun
One moon
And one ME

By: Jill Eggleton
Appendix E

I Want to Learn poem

I want to learn_______________________________

I can________________________________________

I want to learn to_____________________________

I can________________________________________

I want to learn to_____________________________

I can________________________________________

I want to learn to_____________________________

I can________________________________________
Appendix F

Guided Fantasy Script

This is your fantasy about your special day. It is a special day because you don’t have to go school. Today you can do whatever you want to. Where will you go? To Disneyland? The beach? Play with your friends? It will help you to dream of what you “really” want in your life.

Close your eyes and allow yourself to get as comfortable as possible. Take some deep breaths and relax.

Think of yourself, somewhere 20 years in the future! This will be enough time to take further education towards the career you want.

See yourself waking up in the morning. Look around the room, before you even get out of bed . . . Now it is time to get up. Look around your home as you go to the kitchen for breakfast. Is there anyone there?

Now it is time to get ready for work. Return to your bedroom and look through your wardrobe considering what you will wear today. Is it something quite casual or will you wear a business suit, maybe you have a uniform to wear. See yourself getting dressed for work.

You leave now to go to work. Before going in, look around at your place of work. Is it a large or small building? Do you work inside or outside? Is it an institution, such as a school or a hospital that you are going into? As you go in, see who is there. What is the atmosphere like? . . . Is it fast paced and hectic or slow and relaxed? Are there lots of people or just one or two others or are you alone? Who greets you? Who do you talk to?

As you start your day’s activities, think about what you will do at work that day. Think
of the kind of skills you will be using and the tasks you will be doing . . . Will you work with
people: teaching, helping, curing? . . . Are you designing, writing, working with your hands,
drawing? . . . Do you work with numbers? . . . Do you work on a computer? . . . Do you work
alone or is there a group of people working with you? Imagine yourself going through your
morning activities.

Now it is time for lunch, how will you spend your lunch hour? . . . Consider the ways you
could spend your time. Have you brought a lunch or will you meet someone for lunch? . . .
Maybe you are so busy that you work right through your lunch hour or do you have an activity
that you do over the lunch hour? Imagine yourself enjoying your lunchtime.

The afternoon is here. Will you return to work? Will you return to the same place of
work? If not, consider what you will do and where you will go. Do you do the same activities in
the afternoon as you did in the morning? . . . Do you have a major project that you are
completing or do you do different tasks in the afternoon? Think about who you are working with
. . . are they young or old? . . . mostly males or females? . . . What is your supervisor like or are
you the supervisor? See yourself going through the afternoon’s activities.

It is the end of the working day. See yourself getting ready to leave. Think back over
your day and think of one thing you did that gives you a sense of accomplishment.

How will you spend your evening? Will you go out to dinner or go home? . . . Do you
spend your time with others or are you alone? Think about the activities that you could do in the
evening. Have you brought work home? . . . Will you take a course or maybe teach a class? . . .
Imagine yourself enjoying the evening’s activities.

Now it is time for bed. As you turn off the lights in your home, have one last look
around. Just as you drift off to sleep, think of one thing you are really looking forward to doing
tomorrow.

Now the fantasy is over. Take a few minutes to become oriented to the room again.
When you are ready open your eyes.

Go back to your desk write and draw what you imagined on your special day.
Appendix G

Your Special Day
Appendix H

Resources Used


Eggleton, J. (n.d). Only one me.
Appendix I

Student Evaluation Form

Thank you for participating in this unit plan! I would like to know if it was helpful and how it could be made better. Please answer the questions on this sheet to help me with this

**Part 1:** Please let me know if you did the activities.

<table>
<thead>
<tr>
<th>Activity</th>
<th>I didn’t do it</th>
<th>I did it</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Part 2: Please let me know if you thought the activity was helpful by circling in whether you thought it was “not good at all”, “good” or “great”.

<table>
<thead>
<tr>
<th>Activity</th>
<th>Not good at all</th>
<th>Good</th>
<th>Great</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>🙁</td>
<td>😐</td>
<td>🙂</td>
</tr>
<tr>
<td></td>
<td>😞</td>
<td>😐</td>
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</tr>
<tr>
<td></td>
<td>😞</td>
<td>😐</td>
<td>🙂</td>
</tr>
</tbody>
</table>

What did you like about this unit plan?

______________________________________________________________________________
______________________________________________________________________________
______________________________________________________________________________

How could this unit plan be made better?

______________________________________________________________________________
______________________________________________________________________________
______________________________________________________________________________

<table>
<thead>
<tr>
<th>I Don’t Agree</th>
<th>I’m Not Sure</th>
<th>I Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>This unit plan helped me to learn a lot about myself.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Statement</td>
<td></td>
<td></td>
</tr>
<tr>
<td>---------------------------------------------------------------------------</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>This unit plan helped me to learn a lot about careers.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>This unit plan made me excited about what I could do with my life.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>This unit plan made me want to learn more about different careers.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Part 3: Please tell me how much you agree with the following statements by circling in the face that tells me how you feel:

Thank you very much for your help!!

---

### References


1) **Title of the Submission**: Follow Your Dream: Integrating Career Education into English Language Arts 20-2

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Follow Your Dream: Integrating Career Education into English Language Arts 20-2

Abstract

In this project, a career education unit called *Follow Your Dream* was integrated with the Alberta Education (2003) English Language Arts 20-2 program and delivered to 68 Grade 11 students at an urban middle school in Calgary, Alberta, Canada. The nine-lesson career education unit encouraged students to complete structured career planning activities and analyze a variety of poems related to self-awareness, perseverance, and ambition. According to student feedback after the final lesson, 96% of students somewhat or fully agreed that the unit had helped them to identify their personal values on self-fulfillment, 95% indicated that the unit had allowed them to discover their strengths and attributes, and 100% felt that the unit had enabled them to: (a) identify meaningful goals to pursue; (b) explore meaningful career options that promoted their individuality and strengths; and (c) evaluate their career options and their support systems to pursue their goals. On average, 90% of the students rated the activities as *Helpful* or *Very Helpful*. Overall, the career planning unit was very successful in its use of English Language Arts to engage students in career planning activities.

*Keywords*: adolescents, career planning, career education, self-awareness, English Language Arts
Follow Your Dream: Integrating Career Education into English Language Arts 20-2

Career exploration is critical during senior high school as students begin to engage in self-exploration and evaluate their future career options (Dupont & Gingras 1991; Gati & Saka 2001; Julien 1999; Super 1990). According to Taveira, Silva, Rodriguez, & Maia (1998), the process of career exploration and decision-making can be a particularly stressful time in an adolescent’s life. Adolescents may attempt to place the responsibility for making a career decision onto others and may even delay or avoid making a choice, which could ultimately lead to a less than optimal decision (Gati & Saka, 2001; Witko, Bernes, Magnusson, & Bardick, 2005). Therefore, senior high school students must be provided with the necessary career education, counselling, and tools to make meaningful choices for themselves and effectively transition into post-secondary education and/or the world of work. However, career counselling research also indicates a lack of resources for these students as high schools are challenged to provide graduates with the knowledge and skills to pursue individual career goals (Bloxom et al., 2008).

This paper outlines a cross-curricular method to directly implement career education for senior high school students through the study of English poetry. Eight poems (see Appendix A) were compiled for students to explore and analyze. These poems contained themes of self-awareness, ambition, and perseverance. The exploration of these themes was connected with career planning objectives as students engaged in purposeful exercises, questionnaires, and written responses to develop an understanding of their individuality, values, strengths, goals, and career options. Students collected all of their responses and results from the activities and compiled a personal career portfolio to show potential employers in the future. In addition to
meeting English Language Arts objectives and addressing English as a Second Language (ESL) outcomes, this poetry unit provided students with career knowledge and skills that they may directly implement in their lives after high school.

**Context of Teaching Environment**

**Demographics**

The career planning unit was implemented in a large urban Catholic School with 46 male and 22 female Grade 11 students who ranged in age from 16 to 19. Career education was delivered in two English Language Arts 20-2 classrooms as a poetry unit. There were 26 ESL students in both classes ranging from Levels 3 to 5 in English language proficiency. Nine students were coded with a learning disability which affected their acquisition, organization, retention, understanding or use of verbal and nonverbal information. Five students were identified with a mild to severe physical or medical disability in which their physical, neurological or medical condition required modifications to the learning environment. This primarily meant that these students were given breaks where necessary to avoid high levels of stress. Three students were coded with multiple disabilities, as they had two or more non-associated mild to moderate disabilities which included Attention Deficit Hyperactive Disorder (ADHD). One student was identified with a mild to moderate emotional/behavioural disability which was seen in chronic or pervasive behaviours that interfered with his learning.

Due to the school’s location and urban nature, students came from diverse cultural and socioeconomic backgrounds. The high number of ESL students significantly enriched the unit’s content by providing a variety of different worldviews, cultural experiences, and understandings.

**Cross-Curricular Integration**

This career unit was primarily integrated into English Language Arts, although it also met outcomes in the English as A Second Language (ESL) curriculum.
**English Language Arts 20-2 Outcomes**

The career skills unit achieved the following ELA outcomes as prescribed by Alberta Education (2003):

<table>
<thead>
<tr>
<th>1.2.1 Consider new perspectives</th>
<th>a. compare own ideas, perspectives, and interpretations with those of others, through a variety of means, to expand perceptions and understandings when exploring and responding to texts (p.17)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.2.2 Express preferences and expand interests</td>
<td>b. expand interests in a range of genres and in a variety of texts and text creators, and explain how the content and style of various texts appeal to audiences with particular interests and preferences (p. 17)</td>
</tr>
</tbody>
</table>
| 1.2.3 Set personal goals for language growth | b. set goals and employ strategies for language growth in relation to formal and informal personal communications and community involvement (p. 18)  
  c. identify and access learning sources and opportunities; assess, weigh, and manage risk; and demonstrate a willingness to continuously learn and grow (p. 18) |
| 2.1.1 Discern and analyze context | b. explain how a text can be studied to understand the context- or aspects of the communication situation within which the text was created [for example, recognize that specialized terminology in a text may represent a particular occupational group and provide insight in understanding the text] (p. 29) |
| 2.3.1 Connect self, text, culture and milieu | b. respond personally and analytically to ideas developed in literature and other texts (p. 35)  
  c. explain how the choices and motives of characters and people presented in texts may provide insight into the choices and motives of self and others (p. 35) |
| 3.2.1 Select, record, and organize information | b. select information and other material appropriate to purpose from a variety of print and nonprint sources (p. 42)  
  c. record information accurately and completely; and document and |
| 3.2.2 Evaluate sources and assess information | b. assess information sources for appropriateness to purpose, audience and presentation form (p. 42) |
| 5.1.3 Recognize accomplishments and events | a. use language and image to honour own and others’ accomplishments (p. 65) |

**English As a Second Language (ESL) Outcomes**

The career planning unit also achieved ESL outcomes, especially since 38% of the students involved were ESL learners. The following are the objectives achieved as prescribed by Alberta Education (1997):

| General Outcome 1: Students will use spoken and written English to gather, interpret and communicate information. | Specific Outcome:  
- Students will locate, gather, and interpret information (Levels 1-5) |
| General Outcome 2: Students will use spoken and written English to establish and maintain relationships | Specific Outcomes:  
- Students respond to questionnaires and applications  
- Students express opinions  
- Students explain actions, motivations and values |
| General Outcome 3: Students will use spoken and written English to make decisions, solve problems, and plan and carry out projects. | Specific Outcome:  
- Students evaluate information and ideas |
| General Outcome 4: Students will use spoken and written English to explore, respond to and extend ideas and experiences. | Specific Outcome:  
- Students express and explain personal responses |
Rationale

To facilitate career education and exploration, eight poems that focused on themes of self-awareness, ambition, and perseverance were selected for study. In the first week of the unit, students engaged in self-awareness activities and questionnaires to discover their interests, values, personal attributes, strengths, and weaknesses. The theme of self-awareness is crucial to career planning because students must first be aware of their individuality to determine what careers best suit their personal characteristics. The second week of the unit focused on ambition by allowing students to determine their individual goals and recognize potential challenges to these goals, such as financial obstacles. Exploring ambition and its associated challenges helped students to realize the importance of setting goals that are personally meaningful. The theme of the final week was perseverance, as students were encouraged to explore career options, create resumes, and develop a personal support system. The unit is entitled *Follow Your Dream* to encompass these three significant aspects of career planning: self-awareness, ambition, and perseverance.

This unit met the career development needs of high school students in transition to post-secondary education and/or the world of work because it focused on the reflection of their individuality, values, support systems, dreams, and career options. As they explored the given texts, culture, media, and society around them, students were able to affirm themselves as unique individuals and use their strengths and capabilities towards the exploration of personally meaningful career goals. In summary, the learning outcomes of the unit were as follows. Students were to:

1. Identify their personal values on self-fulfillment;
2. Discover their individual strengths and attributes;
3. Identify meaningful goals to pursue;
4. Explore meaningful career options that promoted their individuality and strengths; and
5. Evaluate career options and available support systems.

**Detailed Description of the Unit Plan**

The career unit was delivered in conjunction with the English Language Arts 20-2 Poetry Unit through a series of nine lessons which took three weeks to complete effectively. Each lesson took 85 minutes. The schedule of career education lessons and their associated activities are described in the following paragraphs.

**Lesson 1: Being Somebody**

This introductory class included the study of two poems to meet both English Language Arts 20-2 and Career Education outcomes. The first poem, “Introduction to Poetry” by Billy Collins (1988) was examined for imagery and other literary devices. This poem highlights the idea that readers may over-analyze literature when the purpose of certain texts is for readers to simply enjoy the art and engage in self-reflection. Expanding on the message of self-reflection, Emily Dickinson’s (1891) poem “I’m Nobody! Who are You?” was studied to understand the meaning of being a “somebody” versus being a “nobody” in society. In this poem, Dickinson makes an interesting point about the importance of being a unique, independent person rather than just being an ostentatious “somebody” in one’s social context. Students discussed different ways of becoming their own “somebody” in society, especially with their career goals and plans. The quote “Do what you love, love what you do” was mentioned to explain how one’s interests strongly shapes the person he/she is.
Students then completed the My Ideal Day guided imagery activity (Appendix B) in which they imagined their ideal work day from morning to evening. Students were asked to close their eyes and imagine a perfect day 10 to 15 years into the future. The teacher then led them through imagining virtually every aspect of this day, including where the students were, who they were with, what types of tasks they were doing, and so forth. Upon completion of the guided imagery activity, students wrote down the details of their ideal day and shared these details with a partner. The details they noted illuminated their specific interests, which were related back to the quote “Do what you love, love what you do.”

After completing the My Ideal Day activity, students then independently completed an interests questionnaire (Government of Alberta, Human Resources and Employment, 1999) to further determine other interests that could be helpful in their career planning. This interests questionnaire first asked students to determine various interests that they associated with their hands, feet, heart, ears, mouth, and eyes, such as playing soccer with one’s feet and knees. Students were then asked to consider which additional interests they would like to develop and/or rediscover. The students also identified interests that had always been important to them, and then considered which of these interests could be applied lucratively to start a business or bring in cash. They collected their responses to the questionnaire and the My Ideal Day activity in their portfolios.

Lesson 2: Going Against the Grain

This lesson focused on individuality and self-fulfillment under the constant challenge of conformity. Students examined the poem “1958” by Gwendolyn MacEwen (1987) which discusses the issues of blind acceptance and peer pressure in a high school environment. The descriptions of cliques and stereotypes in the poem led to an insightful class discussion on the
importance of staying true to one’s self, personal values, and beliefs. Students then transformed the “1958” poem into a 2013 version to identify current and relevant challenges with individuality, such as the peer pressures of staying up to date with the most recent trends.

After updating their poems, students then completed a values test (Government of Alberta, Human Resources and Employment, 1999) to add to their portfolios. This values test listed 36 values, such as security, variety, creativity, and stability, and asked students to rate each value as “Not Important,” “Important,” or “Extremely Important.” After rating the importance of each value, students were asked to select and rate their top six values that they would want to incorporate in their future work. Students’ responses to these tasks helped them to identify their most meaningful values and understand the significance of prioritizing these values in future career plans and goals.

**Lesson 3: Loud and Proud**

In this lesson, students examined the poem “Litany” by Billy Collins (2002), to appreciate the effective use of imagery and metaphors. The poem uses unusual imagery and metaphors to describe and highlight an individual’s special qualities and characteristics. After reading the poem, students watched a video of Billy Collins performing “Litany” on YouTube (Appendix A). The performance brought students’ attention to the poem’s elements, devices, and techniques, which achieved English Language Arts 20-2 outcomes. By experiencing the performance, students were better able to gain an appreciation for the effectiveness and artistry of “Litany.”

The purpose of examining “Litany” was to let students identify attributes and skills that made each of them unique. After experiencing the poem, students shared Pride Stories with partners, wherein they described a life experience that evoked a strong sense of pride. For
example, some students described personal accomplishments such as earning a scholarship or victory in a sports tournament. After students finished sharing their Pride Stories, their peers wrote down a list of specific skills that were required for the speaker to achieve such success. The speakers then read the list of skills their peers attributed to them and picked the top five skills that resonated most with them. Students included their written Pride Stories and peers’ feedback in their portfolios for further reference. This activity enabled students to feel affirmed in skills they possessed that could be transferable to career goals.

To further their understanding of themselves as capable individuals, students also completed a “What kind of person are you?” quiz (Government of Alberta, Human Resources and Employment, 1999) to reflect on personal attributes they were happy about and/or would like to improve on. This quiz provided students with a list of 23 positive characteristics, such as courteous, dependable, tolerant, and self-directed. Students indicated whether they were happy with their current level of each positive characteristic or if they would like to improve their ability to reflect each characteristic. Afterwards, students were asked to reflect on which characteristics they would want to improve and how they could work on these characteristics. These reflections were also included in students’ portfolios.

**Lesson 4: Life Regrets**

The purpose of this lesson was to encourage students to be self-aware and proactive about their goals and dreams, especially given the finite scope of life. Students were shown an infographic, “The top 10 regrets in life by those about to die” (n.d.), which was created based on interviews with residents in palliative care facilities. This infographic depicts senior citizens thinking about regrets that they have, such as “I should have made more time for my friends,” and “Happiness is always a choice, I wish I knew that a lot earlier.” According to the
infographic, the greatest life regret on the list was never having the courage to pursue one’s dreams.

The poems “Harlem” (Hughes, 1994) and “The Road Not Taken” (Frost, 1920) were read to address the topics of choices and regrets and further the theme of ambition in career planning. “Harlem” is a brief poem that invites the reader to consider what happens to dreams that are deferred, and to imagine whether these dreams wither, rot, or explode. In “The Road Not Taken,” the speaker describes a past decision to select one road over another at a fork in the path, and muses about the road that was not taken. The speaker acknowledges that the chances of revisiting the path are very slim, but wonders what the other path would have been like. The poems were studied and contrasted to allow students to develop critical responses and achieve English Language Arts 20-2 outcomes. These texts easily lent themselves to the career education theme of *Follow Your Dream* since they discuss the importance of developing courage to pursue one’s aspirations.

After engaging with the two poems, the class completed The 99-year-old Question. In this activity, each student was asked by the teacher, “If I ran into you later in life when you are 99 years old, and everything in your life had gone perfectly according to plan, what would you tell me you’ve done and accomplished?” Students responded to this question by listing the goals they wished to pursue in their lives. After completing their lists, they classified their goals into short-term, intermediate-term, and long-term pursuits. The teacher explained short-term goals take one year or less to accomplish, intermediate-term goals take one to five years to achieve, and long-term goals take more than five years to complete. Students shared their classified goals with a partner and included their lists in their portfolios for future reference.
Lesson 5: Skills to Sell

In this lesson, students read John Updike’s (1993) poem “Ex-Basketball player” to discuss the importance of maximizing one’s talents and abilities for as many options as possible in life. The poem describes a former athlete who was renowned for his exceptional basketball talent but did not go on to further his skills or seek other related career options. Instead, he now works as a gas station attendant. This poem was intended for students to realize how important their skills and strengths are in a dynamic and rapidly changing society.

After analyzing the poem, students completed an individual skills test (Government of Alberta, Human Resources and Employment, 1999) to examine the skills that they could transfer to various work situations. Students assessed the skills they possessed in several skill categories: numerical, communication, leadership, sense awareness, using logical thinking, service, organization, technical, self-management, and being innovative. Each category involved several specific skills, and students checked off the skills that they currently possessed. After checking off relevant skills, students were asked to create lists of the 10 skills they did best, the 10 skills they most enjoyed using, and the 10 skills that they would like to develop. Students then added these lists to their career planning portfolios.

Lesson 6: Multiple Choices

This lesson allowed students to take an online career matchmaker quiz that generated recommended careers based on students’ responses to questions about their values, beliefs, interests, and skills. This activity helped them to explore the wide variety of career options available to them and gain information about particular occupations of interest. This class was held in a computer lab where students were able to access the Career Cruising (n.d.) website. Students were able to create personalized planning accounts, complete a career matchmaker quiz,
explore careers of interest and qualifications, inquire about programs and apprenticeships in
different post-secondary institutions, and develop skills for employment such as resume building.
The class was spent exploring multiple career choices by reading and comparing work
descriptions from people who work in specific professions.

After reading about a number of different career options, students picked their top three
careers and printed off all available information from the website, especially the details on
required education and training. They compared the details between each career and included
this information in their portfolio. Students then reread their interests, values, beliefs, skills set,
and goals and matched them against each career to carefully evaluate their options. The purpose
of this activity was to convey why careers of interest should be self-gratifying. For example, one
student stated that travelling is an interest and goal so the career choice of being a flight
attendant was understandably fitting and meaningful to her.

Lesson 7: Taking Steps

This lesson was designed to allow students to identify the steps they could take towards
reaching their short-term and intermediate goals, including the pursuit of one of the three career
options they had researched. Many students realized the important step of gaining experience
through a part-time job or volunteer position. This led to the exploration of the Resumes section
in the Employment tab of the Career Cruising website. Students added all of the information
about themselves from their portfolio to the resume-builder, generated a resume, printed two
copies, and saved the file in their account. They then took one copy of their resume and swapped
with a classmate for peer review and feedback. This was a very effective exercise as students
took charge of their work and helped each other. It also identified how important it was to save
money or budget more wisely for their goals, especially in the case of post-secondary education.
Students engaged in a short budgeting exercise (Government of Alberta, Human Resources and Employment, 1999) where they tracked their daily spending in a given chart. With some math, students determined the annual cost of their current spending and gained an idea of how much they could possibly save now to meet the tuition and/or apprenticeship fees of post-secondary programs they wished to pursue after high school. Students were then provided with a “Tips To Help You Save Money” (Money Mentors, 2004) article to review. This article outlined numerous ways for individuals to save money on the needs and wants in their budget, such as housing, utilities, food, transportation, and recreation. Students then completed a short written reflection describing ways to personally save for their career goals and included this response in their portfolios.

**Lesson 8: Portfolio Day**

In this lesson, students worked in pairs to share their portfolios with one another. Students had 10 minutes with two peers to share what they had learned about themselves by briefly discussing their ideal day and their responses to the interests questionnaire, values, skills, and daily spending tests. They also briefly described the careers they were most interested in and how they were prioritizing short-term and intermediate-term goals towards them. While each student was presenting, peers filled out a completion sheet (Appendix C) that indicated which tasks the presenter had completed in their portfolio. To receive full completion marks for their English Language Arts minor task grade, students must have completed the nine unit tasks. Students were also held accountable for making the best of the unit by engaging in all activities and exercises that were available.

**Lesson 9: Rally your Allies**
This final lesson focused on the development of personal and professional support systems, especially in the pursuit of dreams and goals. The class read the poem “Alone” by Maya Angelou (1975) which highlights the essential theme that people need each other to illuminate their strengths and overcome obstacles. The poem helped show how success in our complex world depends partly on having a support system of people who can provide information and help when you need it. Students discussed how such people can serve as allies who can help them on their career path. The class made a list of potential allies which included parents, teachers, counsellors, friends, co-workers, and so on. They engaged in the final Relationship Assets activity (Government of Alberta, Human Resources and Employment, 1999) to strengthen and expand their support system. Students first read a definition of how potential allies should act, such as sharing information, helping others to succeed, and offering support to others. The students then identified potential allies in their lives and planned a time to contact them, share their portfolios, and/or ask if they could serve as a reference on their resumes. Students were encouraged to keep their portfolios and continue expanding them with certificates, awards, and testimonials. They were encouraged to view their portfolios as reflections of who they were as capable individuals.

Methods of Assessment

Formative Assessment

Each lesson was closely observed by the teacher for student engagement, responses, and suggestions. A formative assessment strategy that was frequently used at the end of lessons was having students rate the quality level with a show of fingers on a scale of one to three, where one was unsatisfactory, two was helpful, and three was very helpful. During the fourth lesson of the unit, students were asked to complete a mid-unit survey (Appendix D) about the activities they
had completed to that point. They rated each activity using the same three-point scale as
described above. Students also provided written suggestions which were immediately considered
to guide instruction and ensure an appropriate balance between poetry content and career
education.

**Summative Evaluation**

At the end of the unit in Lesson 9, students completed a Unit Evaluation Form (Appendix E). The summative evaluation was divided into several sections. In the first section of the survey, students were asked to indicate whether they had completed each of the lesson activities. In the second section of the survey, students were asked to rate the activities in terms of helpfulness on a three-point scale which included “Unhelpful,” “Helpful,” and “Very Helpful.” Students were also asked to make comments regarding the most useful aspects of the unit and aspects that could be improved. In the final section of the survey, students were asked to indicate their agreement with whether the unit’s five learning objectives had been achieved. Students were informed that their responses would be extremely helpful in making the unit as effective, relevant, and deliverable as possible for other students in their grade level.

**Assessment Results**

**Formative Evaluation**

During the brief formative assessment at the end of each lesson, the majority of lessons were rated by students as helpful or very helpful. After the midterm evaluation, student feedback regarding lessons up to that point was taken into account. A significant suggestion students made at this point of the unit was to share their discoveries with their peers. The teacher ensured that this suggestion was implemented in the subsequent lessons, especially in Lesson 8: Portfolio Day where students shared their portfolio with two other peers for feedback.
Summative Evaluation

Fifty-eight out of the 68 students in the class completed the survey due to absences on the day it was administered.

Part 1: Participation and completion. Participation information is presented in the following table.

Table 1

Part 1: Completion of Activities

<table>
<thead>
<tr>
<th>Activity</th>
<th>I did It</th>
<th>I didn’t do it</th>
</tr>
</thead>
<tbody>
<tr>
<td>My Ideal Day</td>
<td>55 (95%)</td>
<td>3 (5%)</td>
</tr>
<tr>
<td>Interests Response</td>
<td>54 (93%)</td>
<td>4 (7%)</td>
</tr>
<tr>
<td>Values Questionnaire</td>
<td>56 (97%)</td>
<td>2 (3%)</td>
</tr>
<tr>
<td>Pride Story</td>
<td>54 (93%)</td>
<td>4 (7%)</td>
</tr>
<tr>
<td>“What Kind of Person are You?” Questionnaire</td>
<td>54 (93%)</td>
<td>4 (7%)</td>
</tr>
<tr>
<td>Goals by 99</td>
<td>51 (88%)</td>
<td>7 (12%)</td>
</tr>
<tr>
<td>Transferrable Skills Questionnaire</td>
<td>48 (83%)</td>
<td>10 (17%)</td>
</tr>
<tr>
<td>3 Researched Career Options/Comparisons</td>
<td>52 (90%)</td>
<td>6 (10%)</td>
</tr>
<tr>
<td>Saving Money</td>
<td>47 (81%)</td>
<td>11 (19%)</td>
</tr>
<tr>
<td>Allies Activity</td>
<td>45 (78%)</td>
<td>13 (22%)</td>
</tr>
</tbody>
</table>

Note: On average, 88% of students reported that they had completed each activity.

Part 2: Perceived helpfulness of activities. Students’ ratings of helpfulness for each activity are presented in the following table. Students’ comments regarding the most useful aspects of the unit and aspects that could be improved are described in the Discussion section.

Table 2

Part 2: Perceived Helpfulness of Activities
<table>
<thead>
<tr>
<th>Activity</th>
<th>Unhelpful</th>
<th>Helpful</th>
<th>Very Helpful</th>
</tr>
</thead>
<tbody>
<tr>
<td>My Ideal Day</td>
<td>12 (22%)</td>
<td>32 (58%)</td>
<td>11 (20%)</td>
</tr>
<tr>
<td>Interests Response</td>
<td>3 (6%)</td>
<td>32 (60%)</td>
<td>18 (34%)</td>
</tr>
<tr>
<td>Values Questionnaire</td>
<td>3 (5%)</td>
<td>23 (42%)</td>
<td>29 (53%)</td>
</tr>
<tr>
<td>Pride Story</td>
<td>12 (23%)</td>
<td>18 (34%)</td>
<td>23 (43%)</td>
</tr>
<tr>
<td>“What Kind of Person are You?” Questionnaire</td>
<td>2 (4%)</td>
<td>29 (54%)</td>
<td>23 (43%)</td>
</tr>
<tr>
<td>Goals by 99</td>
<td>6 (12%)</td>
<td>19 (37%)</td>
<td>26 (51%)</td>
</tr>
<tr>
<td>Transferable Skills Questionnaire</td>
<td>7 (14%)</td>
<td>23 (47%)</td>
<td>19 (39%)</td>
</tr>
<tr>
<td>3 Researched Career Options/Comparisons</td>
<td>0 (0%)</td>
<td>16 (31%)</td>
<td>36 (69%)</td>
</tr>
<tr>
<td>Saving Money</td>
<td>2 (4%)</td>
<td>14 (30%)</td>
<td>31 (66%)</td>
</tr>
<tr>
<td>Allies Activity</td>
<td>3 (7%)</td>
<td>19 (44%)</td>
<td>21 (49%)</td>
</tr>
</tbody>
</table>

Note: On average, 90% of students rated activities as Helpful or Very Helpful.

**Part 3: Determining if learning outcomes were met.** As shown in the following table, students indicated the extent to which they agreed that each of the five learning outcomes had been met by the career education unit.

Table 3

**Part 3: Learning Outcomes Fulfilled as Determined by the Student**

<table>
<thead>
<tr>
<th>Learning Outcome</th>
<th>I Don’t Agree</th>
<th>I Somewhat Agree</th>
<th>I Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. This unit plan helped me identify my personal values on self-fulfillment</td>
<td>2 (4%)</td>
<td>18 (32%)</td>
<td>37 (65%)</td>
</tr>
<tr>
<td>2. This unit plan helped me discover my strengths and attributes</td>
<td>3 (5%)</td>
<td>19 (33%)</td>
<td>35 (61%)</td>
</tr>
</tbody>
</table>
3. This unit helped me identify meaningful goals to pursue

4. This unit helped me explore meaningful career options that promote my individuality and strengths

5. This unit helped me evaluate my career options and my support system to pursue my goals

Note: 98% of students somewhat agreed to fully agreed that this unit met all of the objectives.

Discussion

According to students’ responses, 98% expressed that they somewhat agreed to fully agreed that the five learning objectives of the unit were achieved. Seventy percent of students fully agreed that the unit objective of “[exploring] meaningful career options that promote individuality and strengths” was met, and 65% fully agreed that they were able to identify their personal values, meaningful goals, and a support system through this unit. Overall, these results suggest that students found the unit extremely helpful in allowing them to gain a greater sense of self-awareness and a better understanding of their future career options.

The activities rated by students as most helpful were determining their personal values, researching three careers and making comparisons, and saving money. This implies that these students at the Grade 11 level have a general sense of their personal values, strengths, and attributes as unique individuals. At this point in their lives, students prefer activities that provide them with information, tools, and support to pursue their meaningful goals, especially as they finish senior high school and transition into post-secondary education and/or the world of work.
One student highlights this point with her comment, “I really liked the research of career options and making comparisons. It really helped me choose what I’d like to do as a future job.” Another student expressed a similar opinion, as she “liked how it helped [her] see and realize what [she] want[s] to do after high school and [recognize available] job opportunities.”

Students provided suggestions for unit improvement in the written feedback portion of the survey. A majority of the suggestions involved having more class time and/or doing fewer activities to enhance the quality of career planning. Students rated the My Ideal Day and Pride Story exercises as being the least helpful activities in the unit. These activities were less structured than the questionnaires and some students had difficulty with the abstract nature of these exercises. Given that this unit was incorporated in a less academic classroom with a diverse student population in terms of learning abilities and English language proficiency, difficulties with abstract exercises are to be expected. However, with greater exposure to these abstract concepts and activities, students will grow more proficient and these types of activities will become more helpful for them. At this point in time, students expressed how they could have better identified their strengths and goals through more interactive and hands-on work, such as perhaps meeting with professionals in their careers of interest.

Integrating career planning into the study of poetry was advantageous because it brought the content to life for students. They showed increased participation in classroom activities as they were able to personally relate to the meaningful themes of self-awareness, ambition, and perseverance in the texts. The evident enthusiasm was channelled in students’ work, especially in their writing. Students showed eagerness to complete poetry tasks that they found purposeful and meaningful, which was reflected in improved English Language Arts marks. Career planning overall increased students’ engagement through the exploration and application of meaningful...
themes mentioned above. By engaging in a variety of activities, questionnaires, and writing responses, students were able to personally and practically apply their learning by compiling a portfolio for future employment.

**Challenges and Future Directions**

The biggest challenge with this career education unit was ensuring that there was enough time in the three weeks to achieve English Language Arts poetry outcomes and career education outcomes effectively. The unit was originally designed to study twelve thematic poems to provide more breadth and opportunities for literary analysis. However, after the first two days of the unit, it became clear that students needed more time to examine and relate to the poems. The number of poems was then reduced to ensure thorough study of terms, detailed analyses, and the close examination of the career education theme *Follow Your Dream*.

Another challenge in the unit was student engagement with certain poems and literary terms. While the majority of poems chosen appealed to most students, some had difficulty engaging with the texts at a personal level. An alternative strategy to this challenge is to include an English Language Arts assignment where students choose a familiar song to analyze the relevant theme of following one’s dreams. This would give students an opportunity to engage with poetry in lyrics and literary terms in a more interesting and meaningful way.

Future versions of this unit would do well to incorporate a larger selection of poems, including more visual and multimedia texts relating to the theme *Follow Your Dream*. This would enable differentiation for other grade levels in achieving poetry outcomes in the English Language Arts Program of Studies. The theme of *Follow Your Dream* can be carried forward to other English Language Arts units such as film studies or the exploration of non-fiction texts. For example, films such as “The Pursuit of Happyness” (Smith, Black, Blumenthal, Lassiter, &
FOLLOW YOUR DREAM

Tisch, 2006) could be viewed to examine the protagonist’s perseverance and ambition during his struggle to reach his life and career goals. Students could respond to the film by writing an analysis of how the themes of perseverance, ambition, and self-awareness were exhibited throughout the plot. Alternatively, students could combine an analysis of the film with personal reflections about their own personal goals and how they would overcome obstacles to those goals. These activities would allow students to engage in self-exploration and career planning using an English medium other than poetry.

**Conclusion**

This paper outlined a cross-curricular means to implement career planning and services for students through the study of thematic poetry on self-awareness, ambition, and perseverance. This career unit, *Follow Your Dream*, was designed to foster self-awareness in students as unique individuals with different strengths and skills to contribute in a dynamic society. Students were able to learn more about themselves and explore career options and tools from a variety of resources. Learning about oneself is crucial in setting meaningful career goals because it enables individuals to recognize their strengths and individuality. As the unit progressed, students were empowered to set personal goals for self-fulfillment and acknowledge the need to persevere through upcoming financial and emotional obstacles. Such a unit is essential for students at a critical point in their lives to enable an effective transition into the post-secondary education and/or the world of work they wish to pursue.
References


Appendix A

List of Poems for Analysis

1. Introduction to Poetry – Billy Collins
2. I’m Nobody! Who are you? [260] – Emily Dickinson
3. 1958 – Gwendolyn MacEwen
4. Litany – Billy Collins
   Oral Performance by Billy Collins: http://www.youtube.com/watch?v=56Iq3PbSWZY
5. Harlem (A Dream Deferred) – Langston Hughes
6. The Road Not Taken – Robert Frost
7. Ex-Basketball Player – John Updike
8. Alone – Maya Angelou
Appendix B

Guided Fantasy: My Ideal Day Activity

Script:

This is your fantasy. It will help you to dream of what you “really” want in your career and lifestyle. Try not to put up barriers for yourself. You will have a chance after the fantasy to come back to reality. For now, let yourself enjoy!

Close your eyes and allow yourself to get as comfortable as possible. Take some deep breaths and relax. Let go of any tensions and worries that you may have at this moment.

Think of yourself, somewhere 10 to 15 years in the future. This will be enough time to have taken necessary education towards a career, begin working in an occupation, and/or make any career changes.

See yourself waking up in the morning. Look around the room, before you even get out of bed... Now it is time to get up. Look around your home as you go to the kitchen for breakfast. What does it look like? Is there anyone else in your home?

Now it is time to get ready for work. Return to your bedroom and look through your wardrobe considering what you will wear today. Is it something quite casual or will you wear a business suit? Maybe you have a uniform to wear. See yourself getting dressed for work.

You leave now to go to work or maybe you stay at home... If you stay at home to work, imagine the place in your home where you will work. See yourself going to that place. If you leave your home, think about what type of transportation you will use to get to work. Think about the scenery you pass on your way to work. Think about how long it takes you to get to your place of employment.

Now you have arrived at work. Before going in, look around at your place of work. Is it a large or small building? Do you work inside or outside? Is it an institution, such as a school or a hospital that you are going into? As you go in, see who is there, what is the atmosphere like? Is it fast paced and hectic or slow and relaxed? Are there lots of people or just one or two other or are you alone? Who greets you? Who do you talk to?

As you start your day’s activities, think about what you will do at work that day. DO NOT try to think of a specific job title, but think more of the kind of skills you will be using and the tasks you will be doing... Will you work with people: teaching, consulting, helping, curing? Are you designing, writing, working with your hands, drawing? Do you work with numbers? Do you work on a computer? Do you work alone or is there a group of people working with you? Imagine yourself going through your morning activities.

Now it is time for lunch. How will you spend your lunch hour? Consider the ways you could spend your time. Have you brought lunch with you or will you meet someone for lunch? Maybe you are so busy that you work right through your lunch hour or do you have an activity that you do over the lunch hour? Imagine yourself enjoying your lunch time.
The afternoon is here. Will you return to work? Will you return to the same place of work? If not, consider what you will do and where you will go. Do you do the same activities in the afternoon as you did in the morning? Do you have a major project that you are completing or do you do different tasks in the afternoon? Think about who you are working with... are they young or old? Mostly males or females? What is your supervisor like or are you the supervisor? See yourself going through the afternoon’s activities.

It is the end of the working day. See yourself getting ready to leave. Think back over your day and think of one thing you did that day that gives you a sense of accomplishment.

How will spend your evening? Will you go out to dinner or go home? Do you spend your time with others or are you alone? Think about the activities that you could do in the evening. Have you brought work home? Will you take a course or maybe teach a class? Imagine yourself enjoying the evening’s activities.

Now it is time for bed. As you turn off the lights in your home, have one last look around. Just as you drift off to sleep, think about the one thing you are really looking forward to doing tomorrow.

Now that fantasy is over. Take a few minutes to become oriented to the room again. When you are ready, open your eyes and write out what you imagined in your ideal fantasy.
Appendix C

Peer Evaluation: Completion of tasks

Peer’s Name: _______________________
Marker: _______________________

Completed Tasks

Put a checkmark beside each completed activity:

1. Ideal Work Day description
2. Response to 1 question from interests questionnaire (p.3)
3. Completed Values Questionnaire and list of top 6 values
4. Pride story and list of recognizable skills
5. Completed Questionnaire: “What kind of person are you?”
6. 99 year old question and classified Goals
7. Response to “What skills can you transfer....” (includes 2/3 lists)
8. Top 3 Careers comparison sheet
9. Basic Resume

TOTAL: /9

COMMENTS:
Appendix D
Formative Assessment survey

Feedback on Career Planning

Put a checkmark where appropriate:

<table>
<thead>
<tr>
<th></th>
<th>I don’t agree</th>
<th>I somewhat agree</th>
<th>I agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>So far, this unit has helped me identify my personal interests, values, and characteristics towards a career</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>So far, this unit has helped me identify my strengths and attributes</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Rate the following activities on a scale of 1-3 (1 = unsatisfactory, 2 = helpful, 3 = very helpful)

- **My Ideal Work Day activity:** ____
  (If you rated it 1, what can be improved? ___________________________)

- **“Interests” Question(s):** ____
  (If you rated it 1, what can be improved? ___________________________)

- **“Values” Questionnaire & list:** ____
  (If you rated it 1, what can be improved? ___________________________)

- **My Pride Story Activity:** ____
  (If rated it 1, what can be improved? ___________________________)

- **“What type of Person are you?” Questionnaire:** ____
  (If you rated it 1, what can be improved? ___________________________)

Other comments and suggestions:

________________________________________________________________________________

________________________________________________________________________________

________________________________________________________________________________

________________________________________________________________________________
Appendix E

Follow Your Dream: Student Evaluation Form

Thank you for participating in this career education and planning unit! I would like to know if it was helpful and how it could be made better. Please answer the questions on this sheet to help with this.

Part 1: Please indicate if you did the activities below with a checkmark:

<table>
<thead>
<tr>
<th>Activity</th>
<th>Did it</th>
<th>Didn’t do it</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) My Ideal Day write-up</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2) Interests Response</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3) Values Questionnaire/List of Top 6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4) My pride story and skills</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5) “What Kind of Person are You?” Questionnaire</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6) Goals by 99</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7) Transferrable Skills Questionnaire</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8) My 3 researched career options and comparisons</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9) Saving Money activity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10) My Allies activity</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Part 2: Please indicate each activity’s level of helpfulness with a checkmark:

<table>
<thead>
<tr>
<th>Activity</th>
<th>Unhelpful</th>
<th>Helpful</th>
<th>Very Helpful</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) My Ideal Day</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2) Interests Response</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3) Values Questionnaire/List of Top 6</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4) My pride story and skills</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5) “What Kind of Person are You?” Questionnaire</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6) Goals by 99</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7) Transferrable Skills Quiz</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8) My 3 researched career options and comparisons</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9) Saving Money activity</td>
<td></td>
<td></td>
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What did you like about this unit plan?

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How could this unit plan be improved?

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Part 3: Please indicate how much you agree with the following statements by putting a checkmark in the box that best tells me how you feel:

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<td>This unit helped me evaluate career options and my support system to pursue my goals</td>
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School Boards: Disappearing Dinosaurs or Champions of Effective Public Schooling

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Paper Presented at
Hawaii International Conference on Education
January 5-8, 2014
Honolulu, Hawaii
Although in recent years there appears to be a growing constituency who question the legitimacy of school boards (e.g., Alsbury, 2008; Beckham, Klaymeier-Wills & Weeks, 2011; Fusarelli, Kowalski & Petersen, 2011; Land, 2002; Lewis, 1994, Malen, 2003; Saatcioglu, Moore, Sargut and Bajaj, 2011; Williams, 2003), there is considerable evidence that school boards and the school districts that they govern “make a substantial difference in teaching and learning” (Hightower, Knapp,Marsh & McLaughlin, 2002, p. 4), are essential to advancing equitable and sustainable reform (Anderson, Leithwood & Strauss, 2010) and thereby contribute to successful public education systems (Firestone and González, 2007, Hightower et al; Honig & Coburn, 2008; Leithwood, 2010; McLaughlin & Talbert, 2003; Miller, 2010; Saatcioglu et al., 2011; Sheppard, Brown, & Dibbon, 2009; Sheppard, Galway, Brown & Wiens, 2013). For instance, in a report completed for the Canadian School Boards Association, Sheppard et al., 2013 concluded that school boards matter. Similarly, after having studied the administration and governance of one school district over a five-year period, Sheppard et al. (2009) concluded,

while there are some examples of successful schools that are professional learning communities, these are isolated cases that appear to have had minimal impact on public education overall. If collaborative leadership and organizational learning are to become the norm for schools, rather than something that occurs randomly in isolated cases as appears to be the current circumstance, the school district has the most potential for fostering that change. (p.34)

Although the central focus of Sheppard et al.’s (2009) research was related to school district leadership and its impact on schools and student learning, the authors observed that school boards perform an important governance role, particularly in periods of fiscal restraint and in the context of various political agendas of changing governments and various lobby-groups. They observed, as well, that school boards and the provincial school boards association have considerable influence in mediating the impact of both political lobbies and specific government agendas including major school board restructuring evident in various provinces in Canada and elsewhere over the last few decades.

Notwithstanding the continued support of school boards by some, others have observed that the relationship between elected school boards and the community has become increasingly adversarial. For instance, Fusarelli et al. (2011) argue that, considering the
changing demographic away from small rural communities toward larger urban centers, the original intent of the school board structure in public education--to provide a “form of representative bureaucracy” whereby citizens elect board trustees who they expect to generally match their community values when making decisions--is no longer valid. They observe that in the current context the relationship between elected school boards and the community has become frequently confrontational and as a result “many voters [have become] cynical about their ability to influence schools through elections, [as] they believe that school boards will pursue their own interests once elected…. Increasingly, citizens feel no collective sense of ownership of public education” (pp. 45-46).

Within this environment of increasing negativity toward school boards, several authors (e.g., Berends, Bodily & Kirby, 2002; Rush, 2005) have characterized school boards as inhibitors of meaningful public dialogue that could contribute to ongoing growth and improvement of public school systems. For instance, Miller (2010) reported that in one school district, school board decisions regarding organizational structure and staffing policies prevented the district from being able to appoint personnel to administer and provide oversight and analysis of the No Child Left Behind accountability data, thereby preventing meaningful application of the data that government and others perceived could have otherwise improved student achievement in some of the district schools. Although those supporting the No Child Left Behind program may perceive that this particular school board thwarted efforts to improve learning and thereby inhibited progress, others opposing that program may perceive it to be an example of the level of influence school boards can have as a local counterbalance to arbitrary state control. For instance, given the many debates in the US over the No Child Left Behind Act (Nichols & Berliner, 2005; Raudenbush, 2004), some have argued that having a legitimate authority such as a school board to represent local interests may highlight its value, rather than its weakness (Grubb & Oakes, 2007; Kohn, 2002). As a matter of fact, Sheppard (2012) contends that school boards can function as a counterweight to the infiltration of a corporate managerial agenda focused on increased control of education by government and the single-minded attention to standardized testing that have contributed to the displacement of professionally initiated innovation and “has presented a huge challenge to the sustainability of [meaningful] educational reform” (p. 112).
Interestingly, Moos and Paulson (2014) observe similarly, that the traditional Nordic approach to public schooling, founded on “a participatory democracy and a comprehensive schooling with strong local community roots, [has been] contested by [the demands of the transnational corporate managerial agenda] for accountability, standardisation and enhanced indirect steering from the stat[e] (sic) level” (p. 3). They contend that this observed shift in approach to educational governance has followed an agenda put forth by agencies such as the Organisation for Economic Co-operation and Development (OECD), who have had considerable influence on “national political culture and policies” (p. 2) in at least some member countries. For example, they highlight that one document (i.e., OECD, 1995) has been particularly influential in respect to the management of public bodies such as school boards within the context of the following themes or categories:

1. Devolving authority and providing flexibility;
2. Ensuring performance, control and accountability;
3. Developing competition and choice;
4. Providing responsive service;
5. Improving the management of human resources;
6. Optimising information technology;
7. Improving the quality of regulation;
8. Strengthening steering functions at the centre [and]

Although the context varies considerably from one OECD country to another, it appears that the OECD’s bent towards New Public Management principles has had considerable influence on school board governance in Canada, as well. Of particular note in Canada is the increasing dominance of the previously noted transnational agenda resulting in the consolidation of small local school boards into larger regional boards, and increased provincial control, ostensibly with the stated goal of improved efficiency and effectiveness (McCann, 2012; Sheppard, 2012; Sheppard et al., 2013). In Canada, a troubling side effect of these changes has been the creation of massive school boards serving huge geographical regions. Such structural changes have made it increasingly difficult for school board trustees to meaningfully connect with their local schools, parents and other constituents (Galway, 2006; Sheppard, 2012). Concomitantly, governments and their officials who may not have educational expertise and who have little contact with local school communities make all (or at least most) of the key decisions regarding education (Hall & Hord, 2006; Sheppard, 2012). For example Galway (2006) showed that senior executive positions in Canadian education ministries
are held by individuals with extensive public administration experience, but not necessarily within schools, school boards or other educational institutions outside of government. In fact, less than 40 percent of executives worked as educators or administrators in a school, college or university prior to working in government.

Within the previously-noted corporate managerial context, governments run the risk of conceptualizing education as a commodity, rather than a public good (Shaker & Grimmett, 2004). In such circumstances, the education agenda may be largely influenced by political considerations, such as the demands of special interest groups, as if education could be traded off like natural resources or other commodities, rather than on the basis of more ideal public purposes (Taylor, Rizvi, Lingard & Henry, 1997). In parallel with this shift in educational purpose, there has been an increasing focus on testing (e.g. PISA) and the ranking of students’ performance in comparison to that in other countries. This emphasis on testing and the subsequent ranking of countries, provinces, and states according to test results have forced school boards to “rely on a fairly restricted area of test items when they discuss education” (Paulsen & Moos, 2014, p.169). Furthermore, this appears to have diverted the attention of school boards away from important goals such as student equity and “preparing students for independent thinking and civic participation” (Meyer & Benavot as cited in Paulsen & Moos, 2014) that had previously been a central component of public schools’ “raison d’être.” Paulsen & Moos (2014) opine that the result of such a shift has limited school boards’ potential influence on students’ education.

It is apparent that these contextual changes have severely limited the influence of democratically elected school boards on government-driven plans for public education, yet they have been forced to deal with the often-negative consequences of these agendas. In spite of that, school boards continue to shoulder frontline responsibility for the implementation of these plans and as a result, in some jurisdictions, have become the primary target of the public’s loss of confidence in the public education system. We speculate that, paradoxically, this may have contributed to increased public support for even more centralized control by governments in some jurisdictions (Sheppard et al., 2013).
In spite of these concerns and contrary to various negative voices that cast all school boards as inhibitors of public dialogue, “school board data across all the Nordic countries show a strong agency in local democracy…[whereby] the boards emerge as proponents of local democracy in education” (Moos and Paulson, 2014, p. 173). Similarly, a recent School Board Association Task Force Report in Alberta, Canada conveys a spirit of optimism toward the future potential of school boards:

While the task force identified myriad barriers that impede school boards from functioning as truly robust local governments; [the task force authors expressed optimism] that school boards can overcome those challenges – and that many of the solutions are already in school boards’ hands. It will only take school boards to step up to the plate and take their leadership skills to the next level. (Alberta School Boards Association, p. 2)

Likewise, Saatcioglu et al. (2011) observed that in spite of some negative characterizations of school boards as dinosaurs left over from the agrarian past that do little more than contribute to inefficiency and political inertia…, [they] remain one of the oldest and most legitimate grassroots institutions in America…and they continue to play a central role in democratic governance and in mediating between local community preferences and broader state and federal policy choices. (p. 2)

Drawing upon the theory of social capital as a means of understanding “the link between the internal and external relations of group members…and concrete outcomes related to group or organizational performance” (p. 2), Saatcioglu et al. conclude, “school board social capital indeed plays an important role in improving financial and academic outcomes” (p. 29). Furthermore, they argue that school board engagement in bonding and bridging activities are central to their success. For instance, Saatcioglu et al. (2011) found that where school boards had established strong relationships (i.e. engaged in bridging activities) with specific external stakeholders such as parent-teacher associations/organizations, various civic groups and to a lesser extent with the business community, both financial and academic outcomes improved. Further, they observed that trust, information exchange and shared vision (i.e., bonding activities) have important effects on both improved school board expenditures and reading performance.

Interestingly, though, they found that although “school board social capital…plays an

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1 Bonding activities include such things as facilitating the development of a shared vision, engaging in open/honest exchange of information, and fostering trust with constituents.
2 Bridging activities involve connecting with key external stakeholders.
important role [in] improving financial and academic outcomes” (p. 29), there was a two-
year lag before any manifestation of statistically meaningful effects. They muse that this
latter finding of delayed effects may have implications for the school board election
cycles and school board member professional development. For instance, it might be
wise if training for new school board members occurred early in a school board
member’s elected term and if elections cycles were slightly lengthened.

Within the context of a growing literature in support of distributed leadership in school
systems (e.g., Harris, 2009; Hallinger & Heck, 2009; Sheppard & Brown, 2014; Sheppard
& Dibbon, 2011), it is unusual that more attention has not been given to the role of school
boards and their potential to facilitate increased public engagement in the delivery of K-
12 education (Fusarelli et al, 2011). This is particularly so in light of Sheppard and
Dibbon’s (2011) conclusion that school districts are more likely than centralized
government policymakers to be successful in their efforts to directly impact school
administrators and local school effectiveness. Furthermore, they observe that their
“finding of the importance of [school board-governed] school districts as an important
systems link between government and schools is consistent with a growing evidence base
that school districts are essential to system-wide learning” (p. 136).

Although the aforementioned Sheppard and Dibbon findings relate specifically to school
districts and not to school boards themselves, McLaughlin and Talbert (2003) have linked
the success of school districts to supportive school boards. Furthermore, they have
concluded that school boards are essential to system-wide learning as they “promote and
invest in learning through the system -- in the central office, in schools, in cross school
teacher networks, [and] in units such as the business office that typically are excluded
from professional development focused on instruction” (p. 25). Having accepted the
validity of McLaughlin and Talbert’s contention that school boards are important to the
success of school districts, we believe those investigating the effectiveness of school
boards can legitimately draw upon the expansive scholarly literature that highlight the
importance of school districts in facilitating systems-wide school reform and
improvement (e.g., Firestone and González, 2007, Hightower, Knapp, Marsh &
McLaughlin, 2002; Honig & Coburn, 2008; Leithwood, 2010; McLaughlin & Talbert,
2003; Miller, 2010; Saatcioglu, Moore, Sargut and Bajaj, 2011; Sheppard et al., 2009).
Notwithstanding our previous argument in support of the value of school boards, we acknowledge that the voices questioning their relevance have steadily increased in many jurisdictions (Hess & Meeks, 2010; Land, 2002; Lewis, 1994; Dibbon, Sheppard & Brown, 2012). The most commonly articulated concerns include the failure of school boards to meaningfully connect with parents; public perceptions that they poorly represent the communities that elect them, and their apparent lack of effort or their inability to demonstrate their relevance to their constituents. As previously noted, several scholars (e.g., Fusarelli et al., 2011; Galway, 2006; Sheppard, 2012) have observed that some of these publicly expressed concerns may be related to the aforementioned trend over the past few decades, toward the consolidation of local school districts. In Canada, since the early 1990’s, provincial governments who are responsible for public education have significantly reduced the number of school boards and concomitantly the number of trustees, thereby greatly increasing the number of schools to be represented, the geographical region to be travelled and the population to be served by each trustee. It follows that these changes have made it increasingly difficult for individual trustees to connect with their constituents, at least in traditional face-to-face encounters. In that context, the central focus of this paper is to present the perspectives of selected trustees and school board directors/superintendents and executive directors of each provincial school boards association regarding (a) the relevance of school boards; (b) the nature of their connection with their constituents: (i) within school constituents (students, teaching professionals and support staff) and (ii) out-of-school constituents (parents, and other individuals and agencies), and (c) their perceived impact on public education and the work of schools.

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3 The nomenclature for the sitting members of school boards varies by province or territory in Canada between schools board member and trustee. We have chosen to use the term trustee.

4 Although the nomenclature for the CEO of school districts varies by province or territory in Canada between director and superintendent of education, we have chosen to use the term superintendent.
Methodology

We adopted a research design that involves three participant groups: (1) school board trustees, (2) school district superintendents from Anglophone school boards in all Canadian provinces and territories, and (3) executive directors of each provincial school boards association. We collected participant data through survey and a series of focus group interviews in every province. In order to increase the validity of findings, we took considerable care to collect data from those trustees and provincial school board association executive directors holding office with the Canadian School Boards Association executive board in addition to school board trustees and school district superintendents from all provinces and territories. Three hundred thirty-one (331) school board trustees and 38 district superintendents from across Canada responded to the survey for a total of 369 respondents. As well, we conducted 21 distinct focus group sessions with school board trustees and school district superintendents over an 18-month period between December 2010 and June 2012. Each 60-90 minute focus group session included 5 to 10 participants. The focus group questions were developed through an extensive review of the relevant literature relating to school board governance and through information gathered from three consultation sessions: two sessions with school board trustees and superintendents of education conducted at the 2012 Canadian School Boards’ Association (CSBA) Annual General Meeting and one session with interested members of the Canadian Association for the Study of Educational Administration (CASEA) at its 2010 Congress.

The principal researchers (with some assistance from graduate students) collected data at different times and in differing locations and circumstances over the twelve-month data collection period (Meijer, Verloop, & Beijaard, 2002; Merriam, 2009; Miles & Huberman, 1994). Participant selection was conducted with sensitivity to gender, experience, ethnicity and regional geography.
Data Analysis
Data analysis of numeric and categorical data was consistent with generally established procedures outlined by Bok van Kammen and Stouthamer-Loeber (1998) and Fowler (1998). For the most part, we limited our analysis of the survey data to descriptive measures such as frequency counts and the calculation of mean scores using SPSS (2013).

Analysis of the focus group data for both studies followed the procedures described by Meijer et al. (2002); Merriam (2009), and Miles and Huberman (1994). We recorded each focus group session of 60-90 minutes, labeled each session with assigned pseudonyms for each participant, and subsequently had them transcribed by a professional transcriptionist. We analyzed the transcribed focus group data through the application of a qualitative data analysis program, QDA Miner (Provalis, 2011). Using this program, we coded separate data segments for school board trustees, executive directors of provincial school board associations and school district superintendents of education. Subsequently, we retrieved these coded segments and saved them as separate reports that facilitated the development of specific themes.

Though it may be reasonable to assume some bias in participants’ responses to our questions as all our study participants are school board/school district insiders, it is equally reasonable to assume that as individual elected representatives and appointed senior executives come and go with each election or appointment term and therefore are unlikely to have any long-term personal stake in the continued existence of school boards, the collection of their individual perceptions provide an important perspective of the overall worth of school boards.

Findings
School Board Relevance
As previously noted, in recent years many have observed a downturn in the perceived relevance of school boards in Canada. Given the dramatic population shift toward large urban centers and the resulting changes in school district configurations, school boards are now more dichotomous in their orientations, serving more, large urban populations and/or huge geographic rural regions. Because of these changes, some observers perceive school boards to have become anachronistic (Hess & Meeks, 2010). Within this
context, we sought the views of currently serving superintendents of education, executive directors of the provincial school boards associations and school board trustees regarding their perceptions of (a) school board impact, effectiveness, and what would be lost if school boards were eliminated and (b) the extent to which they perceive school boards are valued by the general electorate.

As previously noted, although some bias in favor of school boards might reasonably be expected, we believe the nature of our questions and the large distribution of responses of school board superintendents, provincial executive directors, and school board trustees provide important insights regarding school board relevance.

When asked, “compared to a decade or two ago, how strong and effective are school boards?” a school district superintendent in the Atlantic region indicated that she perceived school boards to be more relevant today than they were in the past:

I never worked directly with a school board twenty years ago, but just from the public perception, you seem to hear more from the school boards today than you did twenty years ago and…they seem…to have a higher profile in my opinion. They have become more vocal with respect to funding of education, for example, then they may have ten or fifteen years ago…. Certainly, within Nova Scotia they have become much more organized…than they would have been twenty years ago or even ten years ago.

In support of her colleagues view, another superintendent of education rejoined,

from the public perception, the value [school boards] bring to education…has …increased because education in this province has received so much focus and attention, and frankly, increased funding over the past five or six years…. I think the public looks really closely at what school boards do. Not from a taxation, money, governance, etcetera, not from that, but from the service that they provide for their children.

Responding to her colleagues’ comments as previously noted, a school district superintendent from New Brunswick lamented the elimination of school boards in that province:

[the government of New Brunswick] eliminated school boards [and as a result], many, many school areas and school communities now feel that their voice is not heard. They feel isolated, everything is done from Fredericton…and there are school councils, but they often can't get people to serve on them. So this local governance aspect of boards is a crucial component.

A superintendent from Quebec rejoined, “I would second that [because] in Quebec it is the only level of government that solely represents the English community, the only
level!” In spite of his stated support for school boards, he expressed concerns about current public perceptions of the value of school boards:

I personally don't think that the people understand what school boards do in a lot of cases. I think we have not done a very good job in helping them understand. I think they know what schools do, but I don't think they know what school boards really do. We are seen as … sitting in the big ivory tower, and furthermore, they don't know what … commissioners [school board trustees] or elected officials do.

Others expressed similar concerns relating to public perceptions of school boards’ worth. For instance, another district superintendent commented: “I think they are certainly recognized as the body that represents the schools in the … districts [in the province], but I don't know that they would have a lot of political clout.” Similarly, an executive director of a provincial school boards association in eastern Canada opined,

in [our province] school boards are experiencing less and less connectivity with the community and there is a lot of questioning about the relevance of school boards, so I’m not so sure that the community supports us as they once did.

Yet another executive director from a western province expressed a similar view:

In [my province]…in the rural areas there is still that very strong community support for the local school boards and their decision-making, but in the urban areas where most of the population is, there is not that support anymore.

Another observed that the school board for whom she worked was not highly regarded. In fact, it was her belief that they were not perceived as relevant, at all. Similarly, a superintendent of education in another province commented,

I've been part of a senior team for almost seventeen years and have worked in four different school boards in that capacity and I've worked with boards of trustees who have not been functional…and who have actually had a negative impact on the learning agenda…. If the board of trustees isn't focused on student achievement, isn't prepared to work together as a board team that sticks to that vision… then it causes the senior [administrative] team to spend an inordinate amount of time to try to keep some form of balance going and it disrupts. I've worked in situations that were so acrimonious that it would have been better to have no board at all and to work directly with government.

Similarly, somewhat as a summation of what she had heard from others in her particular focus group session, a trustee remarked,

that is a common theme across the country. The local autonomy that we had as trustees of school boards, which could be very reflective of the community, has been interrupted by a very politicized and centralized direction from our provincial governments which compromises quality I think.
Yet another trustee commented,

while society around us has changed we haven't changed. So now society is more questioning. Not that they disagree [with our decisions], they just have high expectations of the system. So they are asking questions, and when we haven't invited the community in and engaged them and we are still behaving in a way that was for a different time, that makes a disconnect.

Several others expressed strong views that for the most part, school board had lost the public’s confidence. For instance, a trustee observed,

when funding cuts come, you hear the people [say], “get rid of those school boards and save some money.” [They perceive] we are [focused on] consolidating schools and closing schools and busing kids long distances, and that is all they see us as doing. They never see us as doing good things [related to learning in schools].

In spite of the previously expressed concerns relating to public perceptions of the worth of school boards, when some of the same individuals were asked if they perceived school boards to be as effective and as strong as they were a decade or two ago, several responded immediately with an emphatic “yes”. Each acknowledged, however, that the role of school boards had changed. For instance, one superintendent commented, “They have different powers, but their importance to the communities is no less. If anything, it is more now than it was previously--to get that local voice!”

Another superintendent commented,

I've seen two sets of trustees who are both equally committed to the student achievement agenda and I've watched around me as boards struggle when trustees are not committed to that. Luckily, all of my experiences in senior administration in the last ten years have been positive ones where they have supported and committed to, right from the start, the student achievement agenda.

Similarly, a superintendent of education from British Columbia observed,

School boards can have a huge effect on the climate in a district. And that comes from how they approach the role or approach the job, what they see as their mandate and whether or not they view the role as an education role or a political role.

Speaking about his experience with his current school board, he perceives “a strong degree of advocacy for [local] communities:

Trustees, for instance, serve on committees such as the special education or a First Nations committee…. Their voices are brought to the school board table on behalf of their communities. So…one of the strong impacts that they have is that they bring those community voices to the table. We don't always get those voices coming through to us, so they…bring those voices.

A superintendent of education in Manitoba commented,

I think school boards are becoming more and more important even though there is that
public pressure to potentially eliminate them…. [If they were eliminated], I think you
would end up with a very bureaucratic system…. [and] you would lose a lot of
energy…at the school level.

Supportive of the previously articulated perspectives, a trustee offered,

I have been involved as a trustee for close to twenty years and I am thinking in the past
ten years…we have become more involved…. Prior to that, we were more rubber
stampers…. The [superintendent of education and other district officials] would
present stuff to us and would bring us ideas and things that we were going to do and
we would just rubber-stamp them… We would listen and would talk to…our
communities and stuff, but now we [have]…a much more active role than in the years
past.

In our view, the following comment by a superintendent of education in Manitoba
provides a suitable summary of what we heard from many participants throughout all of
Canada: “I'd say when they [school boards] are at their best, they are… ‘the keeper of the
flame,’ but you know there are some boards where the fire never got started.” Following
the previous comments, we observed many participants nodding their heads in agreement.

Our analysis of the focus group data reveals that the majority of our participants perceive
school boards to be relevant. It is equally clear that both trustees and superintendents of
education recognize that the majority of the voting public might not share their view. As
well, they acknowledge that the widespread school board focus on school system
restructuring that has resulted in the closure of hundreds of schools throughout most
provinces in Canada has fostered a negative public perception of their role. What is not
so apparent, however, is the extent to which current school board members recognize that
their engagement in school closures and system restructuring may be contributing to their
own undoing. There is good reason to suggest, however; that many of the “trigger
points” that have been the object of public backlash against school boards – school
closures and reorganization, loss of programs, teacher reductions, increased school
bussing distances – have, in fact, been driven by the so-called efficiency measures
imposed by their respective provincial governments.

**Connection with constituents**

In spite of the challenges resulting from both government-mandated school board
consolidation and school boards engagement in school system restructuring, school board
trustees indicated that connecting with and representing their constituents are among their most important roles (Figure 1). Fifty-six percent\textsuperscript{5} of our focus group superintendents of education (SE) and 50% of the school board trustee (SB) participants perceive school boards to be a voice for the local community regarding government policies and procedures and how they are implemented in local schools. Many in both groups believe, as well, that school boards ensure that school programs and activities reflect and maintain local values and culture (44% of superintendents and 39% of trustees); they believe they

\textsuperscript{5}This percentage and others that are based on focus groups participant responses identify the percentage of respondents who commented and shared similar views relating to particular questions, but it does not indicate that the remaining percentage of respondents shared contrary views. In case where contrary views were expressed, we have reported them.
provide an essential link between the community and local school district personnel who interpret and implement both government and school board policies (39% of participating superintendents and 33% of trustees), and they contend that they act as a buffer between government and local community (33% of both participating superintendents and trustees). As further evidence of their perceived connection with the community, 67% of school board trustee survey respondents specified that they engage parents and the larger community in determining district priorities for improving student learning (Table 1). As well, 80% of trustee survey participants indicated that they report to the community on progress in improving student learning and other district priorities (Table 2). In the context of each of the aforementioned roles, the majority of respondents (trustees and superintendents) perceive representation of and advocacy for parent and community expectations to be essential trustee roles. For instance, one school board superintendent commented:

When the advocacy piece is well lived, whereby they truly get what it means to listen to the local community, understand what the local community is saying and bring that to the board table where it doesn't just stay local, they somehow then have the ability to … take care of a larger geographic area…[and] their impact is huge. They understand how to represent the community and…how to be a corporate board and it's absolutely necessary…. I'm all for it, democratic voice, the voice of the people, oversight…. Where that doesn't happen, I think it becomes very, very troublesome.

Another observed,

school boards…provide a form of local governance that allows for representation by school groups, parents and so on in their various districts so that they have a voice and input that's useful in [the development of] policies and reactions to proposals.

A number of trustees felt that parents and school personnel placed value on their visits to local schools and their attendance at special events. Also, trustees in several jurisdictions indicated that they frequently receive requests from their constituents to attend school and advisory council meetings in schools in their electoral zone. Several emphasized that being able to maintain regular contact with constituents in the individual local schools is of central importance, noting that local contact allows trustees to bring local perspectives to the educational decision-making processes that might otherwise be obfuscated or entirely lost. For instance, one trustee from Newfoundland and Labrador opined that without school boards much of the educational decision-making would be centralized, thereby limiting the meaningful input from specific school communities:
You would lose out so much. You would lose the particular culture of the different regions…that translates into the values of that particular region…. How can a centralized power…[develop] policies that would affect Labrador City and St. John's, the same way? It is completely ridiculous!

Table 1. Our board and district personnel engage the community in determining district priorities for improving student learning (school board trustee survey responses)

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<td>14.5</td>
</tr>
<tr>
<td>Disagree Somewhat</td>
<td>68</td>
<td>18.6</td>
<td>33.2</td>
</tr>
<tr>
<td>Agree Somewhat</td>
<td>98</td>
<td>26.8</td>
<td>60.0</td>
</tr>
<tr>
<td>Agree</td>
<td>100</td>
<td>27.4</td>
<td>87.4</td>
</tr>
<tr>
<td>Strongly Agree</td>
<td>46</td>
<td>12.6</td>
<td>100.0</td>
</tr>
<tr>
<td>Total</td>
<td>365</td>
<td>100.0</td>
<td></td>
</tr>
</tbody>
</table>

Table 2. Our board and district personnel engage the community by reporting on progress in improving student learning and other district priorities (school board trustee survey responses)

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly Disagree</td>
<td>4</td>
<td>1.1</td>
<td>1.1</td>
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<tr>
<td>Disagree</td>
<td>14</td>
<td>3.8</td>
<td>4.9</td>
</tr>
<tr>
<td>Disagree Somewhat</td>
<td>54</td>
<td>14.6</td>
<td>19.7</td>
</tr>
<tr>
<td>Agree Somewhat</td>
<td>104</td>
<td>28.2</td>
<td>48.1</td>
</tr>
<tr>
<td>Agree</td>
<td>134</td>
<td>36.3</td>
<td>84.7</td>
</tr>
<tr>
<td>Strongly Agree</td>
<td>56</td>
<td>15.2</td>
<td>100.0</td>
</tr>
<tr>
<td>Total</td>
<td>366</td>
<td>99.2</td>
<td></td>
</tr>
</tbody>
</table>

A superintendent from Alberta indicated that she perceives her central role to be an advocate for public education in all the communities she represents:

I certainly wouldn’t want to see a provincial board. We’ve seen that in other settings and I don’t believe that works. Nor would I want to see an appointed board; I would just worry about the mechanics of that and whether [trustees] become political appointments. I think [elected trustees] add that value of the local community in their voice and guidance in that area.

Similarly, a Nova Scotia superintendent observed, “school board trustees are representative of the community--the values of the community--so the closer they are to the community the more the board understands what [that community] needs.” Another
commented, “a good school board can…foster local innovation and a good school board, because it is local, has a better chance to welcome and to accommodate local diversity.”

Correspondingly, a superintendent from Prince Edward Island opined that the lead role of school boards is to “mak[e] sure that policy reflects the needs, desires and wants of the community…. Trustees represent the community and are very quick to let the administration know what will go over and what won't go over.”

When asked what would be lost if school boards were eliminated, a school board provincial executive director from the Atlantic region responded, boards represent the shared power, the balancing of power and responsibility that was envisioned when quite some time ago people wrote the schools acts in various provinces. They deemed in their wisdom that you didn't need just one input into education; you need defined responsibilities and defined rights and powers at the local levels just as you need those definitions at the central level by government. So you know school boards are an important part of the living…that vision of a balancing of the rights and responsibilities.

A superintendent in Manitoba believes the board functions as… a representative group, [that allows] …educators…[and] administrators, to… hear the political climate out there; and…not just the political climate, but also the concerns. I don't know how we would go forward with decision making without somehow gathering that information from the community.

Agreeing with his colleague, a second superintendent from Manitoba commented, “it's good to have school boards who represent the people, and [who communicate] exactly what they want and what they need, and what their children want and what they need.”

Yet another superintendent (Manitoba) stated, I think [school board trustees] are certainly there to act collectively with the division mission and strategic direction, but they are also there as eyes and ears of their local areas. And I think that they are advocates for those cultures within our division, being a big geographical and socio-economically diverse division. Not to be parochial as a board member, but to bring forth issues through their constituents that we [superintendents] may not know otherwise.

Similarly, a superintendent from Saskatchewan observed, the people in Saskatchewan have high expectations that the board's going to be able to help [with two major issues]: [Ensuring] that their community through the school [1] provides an education for the kids… and [2] preserves the cultural roots of rural Saskatchewan.

School board trustees expressed similar perspectives, placing local representations as a central role of school boards. A trustee from Alberta believes “the main impact of school boards is being able to determine the educational needs of their particular community.”
She believes each community has different needs and to the extent that a trustee is elected locally by specific communities regardless of the geographic size or diversity, he or she has a mandate to work toward addressing the identified needs:

So just by way of example, if you have a community up North and the population is 80% aboriginal, there is going to be certain needs, certain types of delivery systems for education that may differ totally from what you would need in a big city like Edmonton…. And then with people who live in the community, but don't necessarily have kids in the school, they are more concerned quite often [with] the financial side of it…. They don't want their property taxes going up. They want to make sure [school boards] are being fiscally responsible and they are less concerned with what's actually going on in individual schools, other than maybe just as a casual interest if they see a story in a newspaper. So there are different publics that we are dealing with.

Another respondent opined,

We have to make education a public discussion… When [our publics] feel like they are engaged, they will come out and they will vote because they'll care. And they will be knowledgeable when they do…vote, that [the individuals] they vote for are going to make well informed decisions that are in the best interest of the local community.

One trustee from a small city, provided an overview of how school boards can facilitate local partnerships in support of public education:

We have gone into meetings with the city two or three times a year. We've gone into meetings with the chamber of commerce; we've gone into meetings with [another school board] and we bus together, so we use those efficiencies…because we are partners and we are friends and we trust each other. Also, we've entered into talks with our local college and then maybe a third partner…will be with health…. I don't think [the provincial government] could have done that from [the capital city]…. I think we had to be based in the local city--we all know each other, we respect each other and we work toward what is best for our entire community because that is what we value.

When the focus group facilitator asked if an appointed board could fulfill the same local purpose, the same trustee stated emphatically,

that would be a disaster…because…as I said earlier when we go and meet with our municipal counsellors and we go and meet with our MLAs, we are coming to them as equals. We have been elected and they know that.

Clearly, the majority of trustees and superintendents of education who participated in this study are convinced of the merits of school boards and the essential role they play as community and parent representatives. Although they perceive relatively high levels of current engagement between school boards and their constituents in determining district
priorities and in their reporting to constituents the school district progress relating to student learning and other board priorities, 61 percent of our respondents indicated that they would prefer an increase in the level of public and parent engagement in education.

**School board impact on the work of schools**

Eighty-four percent of the 369 school board trustees who participated in our study indicated that they believe school boards have a major impact on what goes on in schools (Table 3). They observe that school boards make policy decisions across a broad spectrum that includes school improvement, strategic planning, the provision of safe caring learning environments, budgeting, human resource management, the application of technologies and innovation in support of in-school learning, student achievement, etcetera (Table 4). Arguably, many of these items could be—and are managed in some jurisdictions—by a central government; however, the majority of our study participants (trustees and superintendents of education) believe that similar to other local authorities such as town and city councils, locally elected school boards are better positioned to make decisions based on locally identified needs.

Given our findings that 67% of school board trustee participants believe that their school board engages the local community in determining district priorities for improving student learning (Table 2) and 55% indicated that school councils provide input into their decision-making processes (Table 5) across a broad spectrum of policy decisions (Table 4), it appears that school boards make an important contribution to the democratic decision-making relating to public education.

**Table 3. School boards have a major impact on what goes on in schools**

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly Disagree</td>
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<td>1.6</td>
<td>1.6</td>
</tr>
<tr>
<td>Disagree</td>
<td>16</td>
<td>4.4</td>
<td>6.0</td>
</tr>
<tr>
<td>Disagree Somewhat</td>
<td>37</td>
<td>10.1</td>
<td>16.2</td>
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<tr>
<td>Agree Somewhat</td>
<td>92</td>
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<td>41.4</td>
</tr>
<tr>
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<td>126</td>
<td>34.5</td>
<td>75.9</td>
</tr>
<tr>
<td>Strongly Agree</td>
<td>88</td>
<td>24.1</td>
<td>100.0</td>
</tr>
<tr>
<td>Total</td>
<td>365</td>
<td>100.0</td>
<td></td>
</tr>
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</table>
Table 4. Categories of policy decisions

<table>
<thead>
<tr>
<th>Categories</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>School development focused on improved programs, teaching and learning and student assessment</td>
<td>78</td>
<td>25.6</td>
</tr>
<tr>
<td>Policy development &amp; governance</td>
<td>48</td>
<td>15.7</td>
</tr>
<tr>
<td>Provision of safe caring learning environments</td>
<td>28</td>
<td>9.2</td>
</tr>
<tr>
<td>The provision of safe, efficient student transportation</td>
<td>26</td>
<td>8.5</td>
</tr>
<tr>
<td>School system restructuring (efficiencies and effectiveness)</td>
<td>18</td>
<td>5.9</td>
</tr>
<tr>
<td>Trustee and internal development Issues</td>
<td>17</td>
<td>5.6</td>
</tr>
<tr>
<td>Human resource management</td>
<td>16</td>
<td>5.2</td>
</tr>
<tr>
<td>Technology &amp; innovation</td>
<td>16</td>
<td>5.2</td>
</tr>
<tr>
<td>Strategic planning &amp; oversight</td>
<td>14</td>
<td>4.6</td>
</tr>
<tr>
<td>Family and community</td>
<td>13</td>
<td>4.3</td>
</tr>
<tr>
<td>Budgeting, finance, resource allocation</td>
<td>12</td>
<td>3.9</td>
</tr>
<tr>
<td>Miscellaneous single items identified by fewer than 6 respondents</td>
<td>19</td>
<td>11.5</td>
</tr>
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</table>

Table 5. School councils provide valuable input into our school board decisions

<table>
<thead>
<tr>
<th>Frequency</th>
<th>Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>21</td>
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<tr>
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<tr>
<td>367</td>
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</tbody>
</table>

Conclusion

Because this study is dependent on perspectives of school board insiders (superintendents of education, provincial school board executive directors, and local school board trustees), it is useful at this point to refer to our methodology. Although it can be argued legitimately that some bias or self-interest in support of school boards can be expected, the interpretive nature of the qualitative element of a mixed methods design does not purport to provide an “objective” analysis of the phenomena under study. The analyses of the focus groups and interviews presented here are the researchers’ representations of the lived experience of the participants who agreed to be a part of the study. The fact that we were able to include such a large number of trustees and superintendents in the research, and the pan-Canadian nature of the study, serves to further validate these representations. Alternatively, it may well be reasonable to question the extent to which other (external) individuals or groups would have the knowledge or insight to better assess school board relevance and their level of connection with their constituents.
Nevertheless, we acknowledge the nature (and some may say limitations) of our methodology and therefore, the claims we make in the conclusions presented in this discussion.

Throughout the course of this study, many trustees and superintendents throughout Canada expressed concern with the tendency of provincial governments to reduce the number of school boards and therefore increase the size of the constituencies that trustees must represent. They perceive that the increasing geographical size and the number and diversity of the constituencies that school boards must serve have contributed to low voter turnout for school board elections and public expressions of concern about the value of school boards.

Having studied the role of school boards and school district for several decades, we share the above noted concerns. Nevertheless, we remain convinced that even school boards that represent large geographical regions contribute meaningfully to maintaining a somewhat local democratic element to public education. Sheppard (2012) argues, the corporate managerialist approach that is typical of many OECD countries is not conducive to meaningful school reform…. Within that approach, rather than work in partnership with school boards, some governments have chosen to either control them or to eliminate them altogether…. While such an approach may give the appearance of improved efficiencies and heightened levels of accountability, and may even produce short term gains in test scores, evidence…suggests that the engagement of such an exercise over a long period of time is likely to stifle meaningful improvements in teaching and learning processes…. [Furthermore], what is most certain is that constant government imposed school board restructuring and the imposition of more centralized government control that is accompanied by an intensifying focus upon a narrowly defined student testing regime are not in the long term best interest of authentic student learning, social justice, or the continued development of an enlightened democratic society.

These findings show that both elected trustees and professionals working within the school district apparatus play a vital role in sustaining a local democratic element in Canadian education. One of the two researchers involved in this work spent a significant portion of his career as a senior public official in a ministry of education while the other held a parallel position in a school district. We observe that school districts provide an important conduit for what people in local communities and regions expect from schools. In one poignant example of how this plays out in school districts, one school trustee observed:
We still do a lot of stuff around programming and things that are unique and I think in British Columbia; [one of these is] the Haida Gwaii immersion program to keep kids engaged in schools to make sure they graduate. That’s not going to come out of central office somewhere where it is planned in Victoria. [It] has to come from a local community. So there is still a role [for school boards], but these [are] tensions that have developed because of …centralization.

Our work with trustees and administrators across the country show that they express concern over centrally determined education policies, that may be well-intended, but fail to account for local needs and preferences in children’s education, and for ethnic and language considerations. From local timetabling issues to community traditions and expectations for regional programming, the decay of local school governance is perceived to be detrimental to community interest for education. Interestingly, these are some of the same reasons for the constitutional responsibility for education by the provinces over the federal government. This respect for local authority over education remains one of the main principles proffered by the Council of Ministers of Education, Canada in the ongoing federal-provincial tussle over educational jurisdiction (Galway, 2006).

The consensus view of the participants in this study is that school boards and their enabling structures serve to protect the diversity of community and regional interests that is characteristic of the Canadian mosaic. Therefore, if we are to continue to enjoy good schools that produce well-educated and informed citizens, regional authority over education must be sustained. At the provincial level, this principle is as important today as it was when it was articulated 150 years ago during constitutional discussions about which aspects of civil governance would be allocated to the provincial and federal levels of government.

Having unquestioned conviction regarding the merits of democracy, yet acknowledging the truth in the words of Sir Winston Churchill "that democracy is the worst form of government except all the others that have been tried" (National Churchill Museum, n.d.), we are convinced that both elected school boards and the school districts that they govern matter a great deal. They contribute meaningfully to good financial management, enhanced programming, improved teaching and learning processes, the provision of safe and caring schools and ultimately, high quality public education for all students.
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EDUCATIONAL TECHNOLOGY IN THE DIGITAL AGE

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Abstract

Educators seek ways to improve the learning process such as stimulating students’ interest in subject matter, helping students visualize concepts, and heightening student-student and student-instructor engagement and collaboration. One valuable approach is through the application of technology.

_Educational technology_ is the use of technological resources, tools, and related instructional strategies to support and transform teaching and learning. Other terms for educational technology include _instructional technology, information communication technology (ICT),_ and _learning technology._

The objective of this article is to present key concepts behind educational technology and its use by instructors and students as foundation for those interested in integrating educational technology effectively into their classrooms. These key concepts include the background (provides a discussion of the historical context, benefits and challenges) and types of current and emerging educational technologies that can support teaching and learning.
BACKGROUND

Historical Perspective

In the 21st century, educators often associate educational technology with digital technology. However, there is a long history of technology innovations for the classroom before computers.

One could begin the historical context of today’s educational technologies with the printed book which was in general use during the 1400’s. According to Wilson, Orellana, and Meek’s interactive timeline (2010), the horn book, a wooden paddle imprinted with lessons, was present in early classrooms circa 1650. It was followed by such technologies as a magic lantern (a forerunner to the slide projector), the chalkboard, the postal service (which later supported correspondence courses), pencil, mimeograph machine, language lab equipment and many others. Arguably, modern educational includes filmstrips, overhead projectors, tape recorders, radios, televisions, film and other such devices. Sometimes, educational technology is specifically designed for education and contains subject-specific content; sometimes, educators repurpose the technology to support learning goals.

Initially, the focus of these past educational technologies was a one-way delivery of content, with no technological means of student feedback. Computer assisted instruction—with some electronic feedback—gained popularity especially in the 1970’s. The advent and development of the Internet and World Wide Web, in addition to providing a growing ubiquity of diverse content, offers rich opportunities for interaction with this content. These technologies provide opportunities for interaction between the instructor and student and among students anytime and anyplace.

Benefits

Roeblyer and Doering point out “old integration strategies are not necessarily bad; new strategies are not necessarily good” (2013, p. vii). Likewise, some instruction may benefit from technology; other instruction may not. In any instructional decision, paramount is the value added of integrating a specific technology in a specific way to meet specific student learning needs and curricular objectives. In this light, this section examines the potential benefits of educational technology particularly when there is an alignment of the technology with the desired learning outcomes.

Alignment with Different Learning Styles. Students learn in different ways and have various learning strengths, areas needing improvement, and interests. One way educational technology supports and transforms learning is by facilitating options for instructors to provide students with multiple paths to learning content.

Bonk and Zhang (2008) have suggested that there are four types of learners:

- Reader or verbal learners learn through written texts and spoken explanations.
- Reflective or metacognitive learners learn through observing and thinking about their learning.
• Visual learners learn through images.
• Tactile/kinesthetic or experiential learners learn by moving around or engaging in hands-on activities.

Educational technology supports the needs of each type of learner:

• Reader – Examples include e-Books, the World Wide Web, and educational podcasts (auditory content). If professors record their lectures, students may listen to them multiple times to increase understanding. Speech-to-text or text-to-speech capabilities, as well as online dictionaries open verbal opportunities for some learners. Learners can publish online their own Websites, books and podcasts.
• Reflective Learner – Examples include blogs (online journals) that allow students to record insights about their learning experiences, and then deepen understanding through feedback from others, within and beyond the classroom. Online discussion boards allow students to think for a time period before responding to a question asked rather than instantly raising or not raising their hand.
• Visual Learner – The Web provides a wealth of visual materials for learners such as videos, photography, and interactive diagrams. Through search tools, learners can easily find images and videos on most academic subjects. Online and mobile applications as well as purchased software and hardware enable students to create their own visualizations of concepts such as concept mapping tools, drawing and animation tools, timeline creating software, and digital storytelling tools.
• Tactile/Kinesthetic learner – Educational technology addresses this type of learner using virtual worlds, online laboratories, and web simulations. Students can use digital cameras, digital scientific probes, and other mobile technologies to move around their environment, take photographs or collect and analyze data that can then be immediately displayed. Even drag and drop technology on smart interactive white boards and in computer games provides kinesthetic learning.

Many other models of learning modalities can be helpful to educators for understanding how technology supports different learners and their learning needs. For example, Howard Gardiner’s *Theory of Multiple Intelligences*, posits nine distinct intelligences that people possess in varying degrees: (1) Linguistic, (2) logical-mathematical, (3) musical, (4) spatial [visual], (5) bodily kinesthetic, (6) interpersonal, (7) intrapersonal, (8) natural, and (9) possibly existential (Gardiner, 2004, p. 4.) According to Gardiner, too often, educators have focused on just the linguistic and logical-mathematical (Gardiner, p. 5), while each of these intelligences can be activated and strengthened to cultivate learning. Johnson and Lamb’s website page on multiple intelligences (2007) provides multiple examples of technologies that can support learning by activating and strengthening these intelligences for learning.

CAST (formerly the Center for Applied Special Technology) focuses its approach to learning on *universal design for learning*. It asserts the value of three principles to open up access to curriculum for all learners, including those with learning disabilities.
providing students with multiple means of representation of concepts;
allowing students multiple means of action and expression to demonstrate what they know; and
multiple means of engagement to keep students motivated. (CAST, 2011.)

Each of these principles can be implemented through different technologies, as described on CAST’s Website. For both Gardiner and CAST, as with Bonk and Zhang, educational technologies have the potential to help meet students’ diverse learning needs and preferences and to build new learning skills.

Engagement for Learning. Technology has the potential to transform learning through engaging students, but technology does not guarantee engagement. Also, engagement is a necessary, but not sufficient component of learning. Examples of poor teaching techniques with technology include tedious lectures by college professors who read from their PowerPoint slides, or whose slides have too many bullets and words and are hard to read. Likewise, students can be tasked to answer factual worksheets online that could just as easily be placed offline. Educational technology can make learning engaging when the instructor integrates the capabilities of the technology wisely and creatively.

The application of educational technology can facilitate engagement in learning by providing new vehicles for the exchange of information among teacher and students. These include classroom polling devices (also called audience response systems) where students can vote, prioritize elements, and perform open quizzes where the instructor and student can receive immediate feedback. Technology also makes it possible to provide multiple channels of communication among instructors and students to inspire learning beyond the classroom.

Examples of just a few ways educational technology can strengthen student engagement and transform learning include:

- Providing access to real audiences for student writing and providing new options for feedback online
- Fostering online connections between the students and immediate, up-to-date information and real-world problems
- Applying critical/creative thinking skills to a wealth of primary documents online, much of which were previously unavailable but now have been digitized.
- Eliminating student frustration by allowing students to engage in more challenging tasks through automating manual tasks.
- Expanding possibilities of collaboration and social learning, both within and beyond the classroom through online collaborative tools and social media.
- Providing multiple avenues for electronic publishing, enabling students to produce polished communication that inspires pride, while requiring creative decision making, across media.
Educational technology can also foster personalized learning and learner control which instructors can nurture. Even before Web 2.0, the hypermedia of the World Wide Web allowed students to choose which links to follow depending on their objectives and interests and create their own learning paths. Now, students can interact with some of Internet’s ubiquitous content by responding, asking questions, generating ideas, and collaborating. Learners can further structure their learning by signing up to follow someone’s blog or twitter feed, by constructing lists of their own resources through an aggregator that collects and delivers articles on a topic a student designates, or by joining a network of people on a certain topic they are studying. The term *personal learning network* is often used to describe this approach to learning.

Some educators have found exciting ways to provide learning through the use of learning games, simulations, and virtual worlds. As early as 2001, Marc Prensky explained how digital games might promote student achievement (p. 106) by providing enjoyment, structure, motivation, feedback; by having clear outcomes; and by involving problem-solving that sparks creativity. Refer to Klopfer, E., Osterweil, S., and Salen, K. (2009) for additional examples.

**Accessibility.** The role of educational technologies in providing accessibility to learning has several dimensions. First, learning is not limited to a classroom. Students can access educational resources anytime and anywhere as long as they have a computer or mobile device that is linked to the Internet. Moreover, institutions that provide distance education utilize an online classroom application called a learning management system (LMS). Students from global reaches can access an LMS and access course content, participate in discussions, take quizzes and exams, communicate with instructor and fellow students via its messaging system, and submit research papers for review by the instructor.

Another way educational technology provides accessibility to learning and the curriculum is through assistive technologies. According to the Public Law 108-446, Individuals with Disabilities Education Improvement Act of 2004, which included amendments to the Individuals with Disabilities Act of 1997 (IDEA), assistive technology is defined as follows:

"Any item, piece of equipment, or product system, whether acquired commercially off the shelf, modified, or customized, that is used to increase, maintain, or improve the functional capabilities of a child with a disability." (Public Law 108-406, Section 602.1)

IDEA mandates that assistive technology be considered for each child identified with a disability.

Some assistive technologies can help students effectively use computers and the Internet but assistive technologies include a wide range of devices that can help students communicate, learn, be mobile. These technologies support both physical and cognitive disabilities. Assistive technologies include simple devices such as pencil grips and more complex devices such as screen readers and electronic aids to daily living.

Web accessibility is another concept that opens information and curriculum to all learners. It refers to ensuring those with disabilities can use the Web: “that people with disabilities can perceive, understand, navigate, and interact with the Web, and that they can
contribute to the Web.” W3C.org provides guidelines for making the Web accessible to all, such as providing labels (alt tags) for images, transcriptions of audio and video, and clearly worded links that screen readers can describe. (W3C, n.d.)

Challenges

Cost. According to the American Council on Education as cited by Bradford, Prociello, Balkon, et al. (2007), total expenses related to higher education telecommunications are estimated in the neighborhood of $7 billion dollars. Acquisition of educational technology is often a costly investment. For example, average first-year costs for a learning management system typically range from just over $26,000 to $192,350. (Cobb, et al., 2011).

One trend is towards open source learning management systems such as Moodle. The software licensing cost of Moodle is nil; however, there many implementation and hidden costs such as setting up and customizing the application for the particular institution. Institutions sometimes join together in purchase options to lower costs.

Technical Issues. Unexpected technical glitches may occur whether caused by an individual computer or user, an internal server malfunction, or a regional Internet breakdown, or other obstacle. Browser and platform incompatibilities also cause problems. Organizations often set up a technical support groups to address these concerns, and instructors often prepare back-up plans.

Resistance to technology. Some students and teachers have a deep fear or dislike of technology. They insist that the traditional classroom lecture approach to learning is optimal and that technology adds minimal value in learning. The term, technophobic, is often used for this attitude.

Reasons for resistance include fear (that the technology will break down, students will know more than the teacher about technology, students will not need the teacher any more); time (a new technology takes time to learn), lack of sufficient professional development, and a general resistance to change.

Digital divide and digital equity. The digital divide refers to disparities or inequalities in access to and use of digital technologies, particularly computers and the Internet, based on such aspects of background as race/ethnicity, poverty, age, gender, country or other factors. Access generally relates to affordability issues and the type and quality of hardware and software students have available to them in their organizations (schools) and at home. Use refers particularly to the purposes for which the instructor and students integrate technology into learning. For example, are students in poorer areas using technology for mastery of factual information and students in wealthier areas using technology for more challenging tasks involving critical and creative thinking and production?

In 2006, Henry Jenkins and colleagues identified a new type of digital divide among students, the participatory gap. Jenkins argues that those who do not develop skills to communicate and collaborate with others online will be left behind. (Jenkins, et al., 2006).
Challenges in acquiring media literacy skills. Developing students’ and instructors’ media literacy skills is a growing need for learners across the age spectrum. Media literacy was important in the past, but as new media rapidly emerge along with new conventions, and as the amount of unvetted information across various media continues to grow exponentially, students need new skills to access, select, evaluate, synthesize, and create information. Students who use technology and media do not necessarily possess the skills to use technology for learning purposes or to use it critically. In the media saturated world of today, recognizing the advantages and limitations/risks of using each medium for a particular purpose becomes of paramount importance and must be taught. In addition, while the written word is as important as ever, interpreting and communicating across media and doing so effectively represents an increasingly important skill. Reading on the Web is also a learned skill, particularly given the non-linear (hypermedia) nature of the Web. The New Media Consortium has listed digital media literacy as one of the main technology challenges in both K-12 and higher education for several years, in its Horizon Reports on Technology. (K-12 Report: 2011, p. 5; and 2012, p. 9. Higher Education Report (2012, p. 9; 2013; p. 9). Teaching content through technology and teaching about technology and how to use it effectively often are deeply intertwined.

Security issues. Both educational technology and users may be vulnerable to online and physical threats.

Hackers may penetrate an institution’s learning management system, database system, or website and access confidential information such as grade books, personal information, or solutions to assignments and tests. Hackers have also been known to vandalize educational websites and conduct denial of service attacks on online academic sites. Hactivists, or hackers with a social cause in mind, may attack collegiate sites to protest policies and actions such as tuition hikes. Identity theft against individuals, including students and faculty, is another type of security violation that must be protected against. Overall, network security is a major component of an institution’s technology infrastructure when employing educational technology.

Physical threats to classroom technology include stolen or vandalized computer equipment. Misuse of the technology may result in malfunctioning equipment. One must not overlook damage to the technology due to natural disasters such as exposure to extreme temperatures and humidity, fires, floods and hurricanes.

Security also involves the ethics and safety of its users. Users of an institution’s network generally must sign an acceptable use agreement to use technology honestly and responsibly. Acceptable use policies require instructors, students, and/or employees to agree to follow a set of rules prior to being granted access to the network. These rules typically include not using the system to violate the law, not breaking into other accounts, not sending out viruses, worms or spam, and not harming others (e.g., through cyber bullying). Sometimes, rogue instructors and students can create serious issues by not complying with these acceptable use policies. Digital citizenship or how to behave responsibly, ethically, and with cultural sensitivity need explicit instruction.
TYPES OF EDUCATIONAL TECHNOLOGY

*Anti-plagiarism applications.* A key tool for instructors, anti-plagiarism software is used to check student assignments against a database of webpages, previously submitted student papers, library databases, and various journals and publications. The amount of matches translates into an index that the instructor uses to trigger an investigation although instructors also use this type of software to help students become better academic researchers.

*Augmented reality.* Augmented reality represents the layering of computer-generated content onto the physical, real-world environment. This content could be sound, video, graphics or GPS data. One example is a visit to a historic battlefield and having computer video and images displayed at specific locations using the student’s mobile device.

*Blogs.* These are webpages made up of frequently updated posts that are arranged in reverse chronological order. Examples of content contained in blogs include: opinions, news, photos and videos, poetry, mini-essays, project updates and fiction. Blogs can be used to encourage student reflection and sharing.

*Cloud computing.* Cloud computing is defined as a “model for enabling ubiquitous, convenient, on-demand network access to a shared pool of configurable computing resources (e.g., networks, servers, storage, applications, and services) that can be rapidly provisioned and released with minimal management effort or service provider interaction” (Mell, et al., 2011) Among its capabilities, cloud computing transfers part or the entire technical infrastructure (such as resources, software, and information) from the organization’s physical location to the “cloud” or a remote data processing and storage location via the Internet. This is an example of the software as a service (SaaS) cloud delivery architecture model (Cloud Security Alliance, 2009). The cloud can be used in an education institution to manage its resources including its learning management system, e-books, administrative files and other infrastructure elements.

*Computer and mobile labs.* Students and instructors benefit from computer and mobile labs that have preloaded software and provide access to learning management systems and Internet sources. Computer labs, with enough computers for an entire class or group of trainees, may be located onsite in particular rooms or in libraries. These collections of networked computers typically are equipped with a printer and needed accessories such as headphones and microphones. Alternatively, institutions may have mobile labs, which contain laptop or tablet carts that can be brought into an instructor’s particular classroom.

*Computer-based simulation software.* Simulations in the classroom engage students actively in a problem-solving scenario for learning. Students make decisions which will affect the outcome of the scenario. In one example, the use of system dynamics computer simulation allows students to experience the Great Depression by creating a model that reflects the environmental factors during the New Deal era. Students learn the complex interrelationships of these factors and how they play out in the economic outcomes of their decisions. (Chilcott, 1996) Other examples of computer-based simulation include virtual surgical dissection and stock market simulations.
Computer-based training modules. Students can sometimes take self-paced training sessions with textual and multimedia content, mixed with interactive activities and feedback. Often the student has to take a quiz at the end of each module to show mastery of content.

E-books and e-readers. An e-book is an electronic form of a printed book. Individuals access e-books through a small portable device called an e-book reader or a computer screen. E-books have a high capacity to hold content and thus take up much less physical space than a collection of print books. E-book readers also contain many built-in features. Some duplicate what can be done with a print book such as underlining and making comments. Features on an e-book not available when reading a print book include automatically saving one’s place, accessing glossaries, search tools, and sometimes linking to supplementary materials. E-books can be purchased instantaneously from any location with a connection to the web.

E-portfolios. E-Portfolios are virtual online repositories where students can provide evidence of their learning over time. This evidence takes the form of reflections, files, pictures, multimedia, blog postings, and hyperlinks. E-Portfolios can also be used for presentations, course-ending deliverables, case studies, documentation for institutional assessment and accreditation, and job-seeking resumes.

Laptops and tablets. Laptops are ubiquitous particularly in high school and college institutions. Its compact design, high capacity, wide range of functionality and inherent mobility makes it a critical tool for any student. Tablet computers are smaller, and offer unique capabilities including a touch screen.

Learning management systems. Both onsite and online classrooms utilize learning management systems for teaching and learning. Features include course content including the syllabus, class discussion areas, assignment areas, class announcements, e-mail and classroom messaging, calendaring, tests and quizzes, gradebook, and access to resources such as a library and university policies.

Mobile applications (apps) for education. Typically available for smartphones and tablet computers, mobile apps are software programs specially designed for these platforms. Mobile apps have been used to support educational purposes across disciplines. They also serve as tools for textbook price comparisons, time management, dictionary and grammar guides, scientific calculators, and language translation. These apps also serve as an extension to the learning management system where they allow students to download or interact with course content and administrative tasks.

Online office suites. Online office suites include word processor, spreadsheet, and presentation functionalities where users create and edit documents completely online. Also, these suites have collaboration capabilities which allow multiple users (including students) to review and edit each other’s online documents synchronously and asynchronously. These suites are useful for collaboration in team projects. Other uses include project sign-up sheets, student-designed surveys and for synchronous brainstorming.

Open educational resources (OERs). OERs, according to University of Maryland University College’s Information and Library Services Website (2013), are “any type of
educational material that’s freely available for teachers and students to use, adapt, share, and reuse.” OER’s include a range of learning materials, from full courses to course content, syllabi, articles, videos and other multimedia; free software tools; and implementation documents. See UMUC’s list of OER resources, as well as advantages and disadvantages of using OER’s on its library’s website. Creative Commons Licensing allows authors and creators to identify how they want other users to use their work (see CreativeCommons.org).

**Podcasts.** A podcast is an audio or video file that has been made available on the web. Interested parties can subscribe to a podcast, and the podcast can subsequently be automatically downloaded to one's computing device. Then the file can be transferred to an iPod or any mp3 player for listening or viewing purposes. A podcast can be educational material such as a lecture, a book reading or a training film. It affords students mobility when accessing the content.

**Social networks.** These serve a variety of communities consisting of Internet users. The community members often share a common interest or activity such as education and educational technologies. Social networks offer a wide range of capabilities including personal profile information, e-mail, instant messaging, customized interface, newsfeeds from friends, photo repositories, virtual gifts, external applications, and many others. Organizations and individuals also offer professional learning networks for those interested in particular subjects relevant to their professions.

**Video and image-sharing sites.** These are where people can view, upload and share video clips or photographs. Educational and disciplinary organizations, schools, and individuals often create their own education channel on video sites. These sites also provides for creative competitions with corporate sponsorship. Students can find rich resources on these sites for learning.

**Virtual worlds.** Virtual worlds allow students to develop their own persona in the form of avatars, and interact with others in an online environment. In the virtual world, students can discover new worlds, build their own environments, create social relationships and transact in an economy using virtual currency. Students enjoy new experiences such as flying while learning. The virtual world allows users to participate in economic, social, fantasy, and learning activities. (Mennecke, 2008)

**Web 2.0** refers to the term coined by technology publisher Tim O'Reilly in 2004, which describes online applications that allow anyone to publish, collaborate and share information and content. Web 2.0 technologies used for education purposes include wikis, blogs, social networks, and video and image-sharing sites. Other examples of Web 2.0 applications include:

- Mini-blog sites that have word limits and permits “following” the postings of an important figure or group
- Audio and video messaging tools that facilitate student-student and student-teacher synchronous communication across the globe for free (see also, web conferencing)
- File syncing software that allows the remote storage of content, accessible from any device
• Slide presentation sharing sites that serve as repository for educational content
• Social bookmarking and annotation tools that help students share links to resources
• Tools for note taking and web clipping for capturing content
• Screen capturing tools for use in student assignments and instructor presentations
• Audio editing tools for use in manipulating sound clips
• RSS readers (Really Simple Syndication) to facilitate feeds
• Easy-to-use online survey and quiz tools

For examples of other types of tools, as well as specific names of tools in each category, see such websites “Cool Tools for Schools” (2013) and “Free Technology for Teachers” (2013).

Web Conferencing Software. This communication tool facilitates real time education and training including lectures, sharing presentations, websites, and desktop applications, and collaboration and dialogue. Web conferencing software delivers audio and often video content. Instructors use this tool to engage the student live via educational content delivery, brainstorming, question-and-answer sessions, discussion opportunities, office hours, tutoring and mentoring, instant messaging and other activities.

Wikis. These are web sites that allow multiple users to easily add, remove, edit and change content in same document. It has been proven useful for a group of people to work together on a particular task asynchronously (“same place, different time”). These are useful for collaborative projects in the classroom such as group writing assignments, task management, student portfolios, science projects and proposal development. The collaborative encyclopedia, Wikipedia, is an example where individuals can add or revise articles that cover a wide range of topics.

FURTHER RESEARCH DIRECTIONS

A key educational trend involves massive open online classrooms or MOOCs which appear to be changing the landscape of education. These are high volume online courses that are free to anyone. Students have the chance of being taught by prominent professors from educational institutions at no cost. Leading companies behind this educational trend include Coursera, Udacity and edX. In these MOOC’s students have the potential to converse with students from around the world. Some universities are currently exploring ways to provide credit for these courses, but currently, because of the high volume and often the lack of an accompanying certification of completion, these courses have mostly been used for self-learning. However, this concept is rapidly evolving and appears to be a potential disruption to traditional educational institutions.

New technologies to support this concept are expected to be introduced and tested. The technical requirements include scalability to support large number of students, multimedia technologies to enhance the delivery approach and communications capabilities for attaining a global reach.

Another important area for research and exploration is measuring precisely the effectiveness of educational technology for improving learning. A particular challenge in this
type of research is separating out the role of the instructor from the functionality of the educational technology.

**CONCLUSIONS**

There will be new, innovative and useful ways to utilize technology to improve the quality of learning for students and heighten the effectiveness of instructors. When applied properly, technology will mean higher levels of interaction and productivity, increased accessibility, and improved efficiencies for everyone involved. The future looks very promising as the educational technologies grow and evolve to better meet the needs of students, educators and administrators.
REFERENCES


**ADDITIONAL READINGS**


**KEY TERMS AND DEFINITIONS**

Assistive technology: Tools and approaches use to help the functional capabilities of a person with a disability navigate and utilize computer devices.

Blog: Web pages made up of frequently updated posts that are arranged in reverse chronological order.

Creative Commons licensing: Creators are allowed to retain copyright and receive credit for their work while allowing others to copy, distribute and make certain uses of their work.
Digital divide: Disparities or inequalities in access to and use of digital technologies, particularly computers and the Internet, based on such aspects of background as race/ethnicity, poverty, age, gender, country or other factors.

Educational technology: Use of technological resources and tools to support and transform learning.

Learning management system: An online application focused on teaching and learning. Features include course content including the syllabus, class discussion areas, assignment areas, class announcements, e-mail and classroom messaging, calendaring, tests and quizzes, gradebook, access to resources such as a library and university policies.

Media literacy: a collection of communication competencies including the ability to access, analyze, evaluate and create media in a variety of forms including print and non-print formats.

Personal learning network: An environment where students can interact with some of Internet’s ubiquitous content by responding, asking questions, generating ideas, and collaborating.

Virtual worlds: An alternative universe that resides on the Internet which allows users to develop their own persona in the form of avatars and interact with others in an online environment.

Wiki: A web site that allows multiple users to easily add, remove, edit and change content in same document.
Using the Urban Environment as a Landscape for Learning

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Learning Science in an Art Museum and a Department Store
Mary Jo Grdina

The introduction of the *Next Generation Science Standards* makes it even more imperative that we seek ways to show how science is done in the real world. Many groups of professionals are exploring ways to motivate young generations, especially women and minorities, to pursue STEM careers. In this presentation we will review research on learning in informal settings, share the history of *two* projects, and propose science lessons. Long before STEM became STEAM, we have been exploring physics in an art museum. With funding from Subaru of America, we have developed and piloted an iPad App that supports a traditional guided tour of *Physics at the Art Museum*. The four learning activities tested focus on Newton's Third Law, Center of Mass, Torque (Rotational Equilibrium), and the Nature of Color. We use artifacts found in the Philadelphia Museum of Art but the approach can be adapted to any art museum.

Given a choice of going to a mall or to a science museum, which will your students choose? The second part of this presentation describes one such initiative. *Science and the Magic of Macy's*, funded by the National Girls Collaborative Project in 2009, describes ways of learning about science in a department store venue. Again, we use Macy's in center city Philadelphia but the approach can be adapted to any department store.

Sport Science in the Urban Environment
Penny Hammrich

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 sport science concepts will be discussed:

<table>
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<tr>
<th>Sport Science Program</th>
<th>6th grade</th>
<th>7th grade</th>
<th>8th grade</th>
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<tr>
<td>Volleyball/Forces</td>
<td>Basketball/Motion</td>
<td>Soccer/Engineering</td>
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<tr>
<td>Golf/Mechanics</td>
<td>Fencing/Gravity</td>
<td>Tennis/Geometry</td>
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<tr>
<td>Track (throwing)/Aerodynamics</td>
<td>Track (running)/Biomechanics</td>
<td>Physical Fitness/Physiology</td>
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A Candid Inquiry into Ethical Dilemmas
Constance Lyttle

During these times of unprecedented kinetic mobilization of family constellations, students with diverse backgrounds and experiences offer new challenges to educators. Correspondingly, educator diversity has begun to mirror that of their students. The possibility for conflict exists in most fields and ethical dilemmas occur daily in school environments, especially in the diverse environment of the urban classroom. Teachers of students with disabilities are continually challenged to make split second decisions, often mislabeled by Monday Morning Quarterbacks as ‘right and wrong’ or ‘good and bad.’

Fortunately, the teaching profession provides educators with professional standards to guide their ethical decision-making. Unfortunately, teacher preparation programs have given little attention to the application of these ethical standards. Even more pointedly, although professional associations are supportive of special educators providing professional standards, research shows that special education practitioners neither own a copy of, nor employ, the standards. See Rock, S. L. (1992); see also Cobb, H. B., & Horn Jr., C. J. (1989). Consequently, preservice and inservice teachers are unaware, not only of their field’s ethical standards, but also, of the best practices for resolving ethical quandaries. See Paul, French & Crangston-Gingras (2002); see also, Paul, Kane & Kane (1996). Consequently, teachers are left to their own devices and are periodically vulnerable to charges of professional conduct violations.

Session participants will review professional educator standards, apply them to commonly occurring ethical predicaments and gain an awareness and understanding of acceptable and unacceptable ethical behaviors, while discerning their own preferred strategies, thus avoiding potential liability accusations and ethical missteps.
Using a Flipped Classroom to Train Pre-service Teachers  
Lori Severino

The Drexel Special Education program is using our partner k-8 school to train pre-service teachers on increasing literacy skills in urban environments. Our Literacy in Special Education course is divided into two sections, one that focuses on the k-8 environment and one that focuses on the 7-12 environment. Students that take the k-8 literacy course on campus are given the opportunity to work with elementary aged students in a response to intervention setting. This particular course is a flipped classroom in which pre-service teachers learn the concepts in the five areas of reading: phonemic awareness, phonics, vocabulary, fluency and comprehension in an on-line environment. During their scheduled classroom time, pre-service teachers run a tier 2 literacy intervention at our partner elementary school.

During their time in the elementary school, the pre-service teachers work one on one or in small groups with children who are not keeping up with their peers in reading. The pre-service teachers, under the supervision of a university professor, assess students to determine a specific area of need in reading: phonics, fluency, or comprehension. The university professor helps pre-service teachers examine the data and formulate a plan for working with the elementary students. The partner school is in Philadelphia and all involved benefit from the experience. The pre-service teachers have closely supervised practice, the students are getting individualized help in an area of need, and the school district receives free services. This model is being further studied for other potential benefits to the pre-service teachers.

Using the Urban Landscape to Enhance Learning in Early Childhood Education  
Dominic F. Gullo

There is wide acceptance in the field of early childhood education that young children learn best in an environment that is relevant to their life experiences, one that is responsive to their individual strengths and needs, and one that stimulates hands-on activities. Projects are one way in which children can experience dynamic environments that encourage learning. Projects are described as in-depth learning studies focused on a topic or a theme. Projects can last for a week, for months, or for the entire school year. The urban landscape provides the backdrop in which early childhood projects can occur. In this presentation, participants will learn how urban settings such as parks, the zoo, museums, or the school neighborhood can be the place where projects are designed, developed, and implemented. With examples derived from urban settings, participants will learn about and discuss how projects
are constructed and used to facilitate children's acquisition of knowledge, skills, dispositions, and feelings. In addition, these examples will also elucidate how developmentally and culturally appropriate practice in early childhood can be implemented. Specifically, projects that take place within the context of an urban environment for children who live there will reflect:

- Age appropriate activities and materials;
- Individually appropriate activities and materials;
- Culturally and linguistically activities and materials; and
- Activities and materials that are relevant, concrete, meaningful, and that promote active engagement in the learning process.

Using a Rekenrek to support urban learners and their basic understanding of number.
Hope Yursa

With the adoption and implementation of the Common Core State Standards for Mathematics and their emphasis on depth of learning rather than breadth it is imperative that all early learners understand and master number sense, emphasized by the NCTM Principles and Standards for School Mathematics (2000). Characteristics of good number sense include fluidity and flexibility with numbers, understanding of the meaningfulness of numbers, capability to perform mental mathematics, and ability to look at the world and make comparisons between the abstract and the concrete (Gersten, Jordan, & Flojo, 2005; Kalchman, Moss, & Case, 2001; Robinson, Menchetti, & Torgesen, 2002).

This presentation will share the implementation of the rekenrek into pre-service teacher training. We will look at both the teacher candidates’ understanding of the rekenreks' purpose and the candidates’ reflections of the developing number sense in the students they teach in pre-student teaching experiences.

The rekenrek is a manipulative developed at the Freudenthal Institute in the Netherlands in the 1960’s. The rekenrek looks like an abacus, but differs in that it is based on a five-structure and not a ten-structure system. It is comprised of two rows of 10 beads, each broken into two sets of 5 by color (i.e., in each row the first 5 beads are red and the next 5 are white). The structure of the rekenrek can push young children toward mastery of patterning and partitioning activities, which are the essential components of subsidization strategies. Patterning involves helping students begin to see numbers as quantities that can be divided into various groups. Partitioning activities take patterns a step further by providing students the opportunity to break numbers into various groups as a means of solving a problem. McClain and Cobb (1999) concluded that these activities are critical for the learning process of addition and subtraction that need to be taught in combination and not as separate mathematic functions.
Professional Learning Communities at an Urban School

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Professional Learning Communities at an Urban School

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Rationale

Professional Learning Communities (PLCs) are one of the best ways to implement change in teaching methods in the classroom. Teachers need the time and resources to discuss, observe, and reflect on learning models. According to Joyce and Showers (2002), “Theory or demonstration alone results in effect sizes for skill of around 0.5 of a standard deviation for refining existing skills and even lower for new skills. When demonstrations and practice are added, the effect size rises to about 1.18 in the average study. When coaching is added to the theory, demonstration, and practice treatment, skill continues to rise.” (p. 76) This gave us reason to believe that implementing PLCs, which includes theory development, practice in the classroom, and coaching by facilitators and each other, would have an impact on student achievement. Joyce and Showers (2002) also found, “a large and dramatic increase in transfer of training—effect size of 1.42—occurs when coaching is added to an initial training experience comprised of theory explanation, demonstrations, and practice.” Because this plan incorporates coaching in addition to the explanation of what works, research suggests the teachers will transfer this knowledge into every day practice.

Key Beliefs

The key beliefs during this year-long professional development are based on Joyce and Showers (2002) understanding that four conditions must be present if staff development is to significantly affect student learning:
1. A community of professionals comes together who study together, put into practice what they are learning, and share the results.

2. The content of staff development develops around curricular and instructional strategies selected because they have a high probability of affecting student learning—and, as important, student ability to learn.

3. The magnitude of change generated is sufficient that the students’ gain in knowledge and skill is palpable. What is taught, how it is taught, and the social climate of the school have to change to the degree that the increase in student ability to learn is manifest.

4. The processes of staff development enable educators to develop the skill to implement what they are learning. (p. 4)

In the PLCs, the school teachers studied together, learned what works, and reflected on what happened in their classrooms. The content covered during the professional development days included evidence-based instructional strategies that have been proven to effect student learning. The focus of the topics for were created based on the results of a teacher survey. The time given to the teachers during the school day to meet, discuss, observe and reflect allowed teachers time to develop the skills to be able to implement what they learned.

Goals

We had four main goals for the year-long professional development:

1. To engage teachers in the professional learning communities practice. Teachers are used to working individually in their own classrooms. Research has shown that working in small learning communities helps teachers to implement new initiatives and strategies. Teachers needed to understand what professional learning communities are, why they are important to the process, and how to work collaboratively in these communities.

2. To increase use of evidence-based effective skills/strategies in each classroom. There is a difference between research-based practices and evidence-based practices. An evidence-based practice has shown to be effective in improving student achievement. The faculty members were aware of evidence-based practices and brought the knowledge and theory necessary to help the school teachers use these evidence-based strategies in the classroom.
3. To increase student achievement in the areas of reading, math, and writing. The ultimate goal of this plan was to have teachers implement strategies in the classroom that would increase student achievement. Reading, math, and writing are integral parts of all subject areas. Improvement in these areas will mean improvement in the other curricular areas as well. Preparing students for college and career readiness is making sure their reading, math and writing skills are developed to the best of the students’ abilities.

4. To provide teachers with the time and resources to be able to implement an effective professional development plan. An effective plan must be implemented in order to be effective. Each part of this professional development plan was important to its effectiveness. Often, plans are started with high expectations and then the daily struggles of what is happening in the school gets in the way of continuing the plan. It is extremely important that teachers were provided with the time and resources to accomplish the goal of increased student achievement. It is expected that if the time and resources are implemented that the teachers and facilitators will follow through on that plan to the best of their abilities.

Educational Context & Participants

The urban charter school in which this study occurred was established about six years ago. There were 12 teachers with a graduate degree out of total 22 fulltime teachers. There were two teachers who are experts and highly qualified in their field, but are not yet certified. According to PA Charter School Laws, schools are required to have at least 75% of teachers certified, and they may employ up to 25% of non-certified, but highly qualified teachers.

Since inception, students at the school continuously outperform their peers from surrounding sending schools. In two of the three years of accountability, the school has achieved Adequate Yearly Progress (AYP). With its unique 7-12 grade configuration, the school provided students who have learning deficits the supports necessary for dramatic growth and the scaffolding necessary for continuity in learning achievement.
Not only does the school provide students with an outstanding education, the school provides a safe setting for learning. The school students are expected to maintain the decorum necessary for academic success, and, as a result, the school has dramatically fewer incidents than the surrounding sending schools.

The school community focused on academic excellence and committed resources to curriculum alignment with the Common Core. The school recognized that many of the incoming students lacked the necessary literacy skills to be successful across all content areas, and added additional focus and learning time toward reading. Providing greater differentiation, especially for high performing students was a priority, as well as developing data driven instruction to support individualized learning for all students. While the school does not plan to grow in grades or size, it does project growing in quality, improving Professional Learning Community experiences for faculty, and improving parent engagement.

The teachers are a significant resource to not only what students learn, but also how students learn. Professional development is one way to increase student achievement; however, it needs to be done in such a way that has proven results. Bruce and Showers (2002) propose “that if a teacher or a community of teachers engages, for a dozen days during the school year, in the formal study of a curriculum area or a teaching strategy that is useful across curriculum areas, and regularly studies implementation and consequent student learning, then the odds are that student achievement will rise substantially.” (p. 3) A good professional development plan that encourages teachers to make the changes in their own classrooms requires giving the teachers the opportunity and time to practice implementing the skills or strategies. This plan provided teachers with the time to discuss, implement and study their teaching strategies. To bring a teaching model of medium complexity under control requires 20 or 25 trials in the classroom
over a period of about 8–10 weeks (Joyce and Showers, 2002). In providing teachers the opportunity to practice skills during an eight week time period, the idea was that the skill would become part of the teacher’s repertoire. Data was collected over the eight week time period and evaluated to provide teachers the knowledge of whether or not that skill was effective. On-going evaluation and assessment of teacher effectiveness and student achievement is necessary to make decisions on implementation.

The National Staff Development Council (NSDC) provides Standards for Professional Learning. The following seven areas were identified as important for a professional development plan:

1. Learning Communities- Professional learning communities (PLC) are an integral part of this plan. Teachers in the school worked in groups of five or six to understand the knowledge/theory, discuss and reflect on student learning while implementing the knowledge, and evaluating student learning to determine the extent of the implementation.

2. Leadership- The school leadership had a vested interest in this plan. The school leadership supported this plan and helped foster teacher buy-in. The teachers leaders were an integral part of the Professional Learning Communities. They ensured that the PLCs were meeting, observing, and evaluating.

3. Resources- By accepting this plan, the school was willing to provide the resources of time, expertise, and finances in order to implement this plan. Teachers committed to the time they spent in Professional Learning Communities. Based on the teacher survey results, the teachers wanted to participate in PLCs.

4. Data- Teacher data was collected through surveys, small group sessions, whole group sessions, and questionnaires. The teachers learned how to perform action research in their own classrooms.

5. Learning Design- PD facilitators will provide theory and evidence-based research in the five areas of the plan. The university faculty members that provided the Professional Development have spent multiple years as practitioners themselves. They are aware of the most current
evidence-based practices for effective instruction. Cohran-Smith & Lytle (1999) state, “knowledge teachers need to teach well is generated when teachers treat their own classrooms and schools as sites for intentional investigation while considering knowledge and theory produced by others as generative material for interrogation and interpretation” (p. 250). This was the intent of this PD plan. Teachers treated their own classrooms as a place for research and used the theory of researchers in the field (Drexel Faculty) for the models or strategies for effective teaching. Once teachers in the school learn this process, the goal is for them to continue the process throughout their teaching careers without the support of the researchers.

6. Implementation- The way the plan is implemented was documented each step of the way. Implementation of the plan was evaluated for its effectiveness and sustainability. A separate study will be done of the practices put forth in this study.

7. Outcomes- Outcomes in teacher effectiveness were evaluated. The study investigated student growth as it related to effective teaching strategies.

This professional development plan included the necessary components of a high-quality staff development. The school teachers worked with experts in content knowledge and pedagogical skills. They had the opportunity to practice these skills and researched the results. The staff was given the time to implement this process during the school day with the help of colleagues and administrators. The plan included what Sparks (2002) identified as high-quality staff development:

- Focused on deepening teachers’ content knowledge and pedagogical skills;
- Included opportunities for practice, research, and reflection;
- Was embedded in educators’ work and takes place during the school day;
- Was sustained over time; and
- Was founded on a sense of collegiality and collaboration among teachers and between teachers and principals in solving important problems related to teaching and learning. (pg. 15)

Activities & Learning Experiences

The activities and learning experiences involved in this professional development plan were directly related to the school’s strategic plan and the results of the teacher survey. This
professional development plan focused on teacher identified needs. The plan relied heavily on Professional Learning Communities (PLC). “Professional learning communities” or “communities of practice” are the terms often given to schools in which staff members provide meaningful and sustained assistance to one another to improve teaching and student learning” (Joyce & Showers, 2002, p.55).

This was not only research-based, but was also the avenue of choice chosen by the teachers. The plan unfolded in three phases throughout the school year. Teachers received four full days of professional development before the school year began. PLC meetings were held after school on a bi-monthly basis, and additional full day inservices on teacher chosen topics were provided every eight weeks.

**Phase 1: In-service Prior to start of school year**-

**Day 1: Team Building, School Vision, Discussion of overall PD plan, Selection of PLC members**

A half-day in-service included activities that encouraged the teachers to work together- this was provided by a Drexel facilitator. Administrators discussed the school vision, the overall PD plan and the selection of PLC members.

**Day 2: Teaching & Learning in the Digital Age for the 21st Century, Student Engagement**

A half day in-service was provided by a facilitator (Drexel Faculty). This was an information session on the latest evidence-based practices for bringing in technology and improving student engagement. Teachers were encouraged to use part of the remainder of the day to make a plan for how they would implement/use these practices in their classrooms.
Day 3: The Common Core Standards and Implementation

A half-day in-service with ELA, Social Studies and Science/technology teachers on incorporating the literacy standards of the common core was provided by expert university faculty on the new Pennsylvania literacy standards. A half-day in-service with Mathematics teachers on incorporating the math common core standards was provided by expert university faculty in teaching mathematics. Teachers that did not teach these courses were welcome, but not required to attend.

Day 4: Teaching Writing Strategies, Working with Special Education and ELL Students, RtI and Progress Monitoring

A two hour presentation by a facilitator was provided for all teachers on evidence-based writing strategies for adolescents. Also, a two hour presentation by a facilitator was provided for all teachers on best practices, modifications and adaptations for special education students and ELL students. A focus on students with emotional behavior disorders was provided based on teacher requests for information in working with students with emotional issues. In addition, a two hour presentation by a facilitator with Special Education teachers on RtI and progress monitoring. Other teachers are welcome to attend also.

Phase II: Bi-Weekly PLC Meetings

Teachers were assigned to a PLC on day one of the five days of in-service. Those PLC teams met every two weeks throughout the school year. A specific topic was discussed, observed, and reflected upon every eight weeks. Five topics were covered throughout the year. During PLC time, a Drexel faculty member assigned to the group, was available to discuss issues, provide deeper learning and help the teachers reflect on their practices (Sparks, 2002, p.55). The Drexel
staff also engaged in classroom observations and coaching throughout the eight weeks in order to help with implementation. The five eight-week topics:

1. Classroom management, classroom behavior, student engagement

   This topic was also discussed during the initial in-service prior to the start of the school year. Since management, behavior and engagement is crucial to student achievement and important to start and maintain throughout the year, it was chosen to be the first topic of the PLCs. Results from the teacher survey showed they wanted deeper training in this area. The Charter school’s positive behavior support plan was reviewed and implemented. The skills learned and the strategies implemented continued through the entire school year.

2. Implementing the Common Core Standards

   As of July 1, 2013, the state of PA adopted the new common core state standards for English/Language Arts and Mathematics. New literacy standards for reading and writing in the content areas were also introduced. The second eight-week session focused on the different content areas. PLCs were rearranged according to content area. Teachers of English were all in the same PLC, teachers of mathematics were in the same PLC, etc.

3. Assessment and Differentiated Instruction

   Teachers in this charter school identified assessing students and differentiating instruction as an area of need in which they wanted to learn more effective strategies. For this eight-week PLC, teachers were grouped according to their area of instruction, similar to the groups for the Common Core Standard PLC.
4. Writing Strategies

This topic was chosen based on the teacher survey and supported the strategic plan on preparing students to be college and career ready. One of the issues seen at the college level is poor student writing. Writing skills can improve student achievement. Writing a summary reflection of a required reading also demonstrates comprehension. The new common core standards also require writing in the content areas. When all of the teachers are implementing writing strategies in their classrooms over an eight week period, improvement in student writing should be the result.

During the PLC meetings, student writing samples were evaluated to determine areas that need scaffolding and additional instruction. The teams decided, based on evidence-based research, how often students should write and what instructional strategies best meet the needs of the students.

5. Supporting Special Education and ELL populations

The strategic plan discusses closing the achievement gap. The teacher survey showed teachers wanted tools/strategies to improve instruction when working with students with IEPs and students where English is their second language. Each PLC decided on different ways to make adaptations and modifications and data was collected to see if some strategies were more effective than others, or if all were successful.

**Phase III: Full Day In-service** (one every 8 weeks during the school year)

These days were offered after the eight week implementation of the PLCs. This provided an opportunity to reflect on what occurred over the eight weeks. The topics for the sessions were similar to the topics for the PLCs. Teachers did not feel they needed additional inservice on the Common Core standards, but rather wanted to focus on effective instructional strategies. The
original plan of including another inservice on Common Core was replaced with an inservice on homework.

1. Student Engagement- During a professional development session, the participants were asked to read *Ten Steps to Better Student Engagement* by Tristan de Frondeville. Teachers then discussed and reflected on strategies they have tried and what the result was in their classrooms. Teachers shared their engagement strategies in small groups to encourage sharing of strategies that were effective.

2. Working with Emotionally Disturbed Students- During a half day professional development session, an overview of the characteristics of students with emotional/behavior disorders was given as well as descriptions of the different types of disorders that fall into this category, ie. Bipolar, obsessive-compulsive, conduct, anxiety, and psychotic disorders. Small groups of teachers were given case studies of students with emotional disturbances. Each teacher in the group was given a role to play in the case study and each group acted out a classroom scenario. A group discussion followed to determine which teacher behaviors escalated and deescalated student behaviors.

3. Assessment and Differentiated Instruction-Participating teachers were given a survey to identify how they currently differentiate instruction and use assessments in the classroom. The results of the survey were used to determine areas of need for support and development. Also, in small groups teachers participated in a cooperative controversy exercise. They were asked to read *Grading for Success* by Carol Ann Tomlinson. The teachers were divided into two groups and were asked to debate the issue of differentiated grading. A discussion and reflection
followed with a role play forcing them to be reflective on understanding differentiated grading from different viewpoints.

4. Writing- Teachers were led through an exercise in argument writing that they could use with their students. Teachers were provided a picture of a scene in which a man appears to have fallen down the steps along with a short narrative describing the events that led up to the fall (Hillcocks, 2011). A graphic organize was used to determine evidence, the rule and conclusion that can be drawn from the evidence and rule. Teachers implemented this activity in their classrooms and had the students use the graphic organizer to write an argument piece on whether they believed the scene was an accident or a murder.

5. Homework- Teachers were asked to respond to a series of questions regarding homework practices. A discussion of homework practices and alternative approaches happened in small groups and best practices were then shared with the main group as a whole.

Evaluation

The Professional Development Program was evaluated after each eight week stage. Drexel Faculty are in the process of identifying the strategies/procedures that were most effective. A teacher evaluation of the professional development plan was also given. Student achievement data in the form of formative, summative, standardized and curriculum based measurements is in the process of being collected. The results will be evaluated for effectiveness of the overall plan.
Preliminary Results

Data collection is in the process of being completed and results are in the process of being analyzed for overall effectiveness. Final results will be forthcoming. Preliminary results of the findings from an end of the year survey are encouraging.

When teachers were asked which topic covered during the PLCs was the most effective for them in their individual classrooms, engagement and behavior was the first choice with 30% of respondents choosing that topic. Positive behavior supports and differentiated instruction were chosen by 20% of the respondents.

Teachers were asked to identify strategies they learned from the PLCs that they implemented and found successful. One teacher commented that he/she brought “a lot more reading and writing into my classroom. I had students work on more assignments during the class period that would focus their attention on passages and their reactions, not just a summary.” Another teacher commented, “The argument writing activity, who dunnit mysteries, worked well with my students. They enjoyed it and were successful in writing their argumentative assignments.” An additional comment, “All English and social studies teachers are using the same model for writing a paragraph: T.R.E.E.”

The results of the overall effectiveness of the Professional Development Plan will be shared in the near future.
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Impact on STEM Education: An Overview of Sisters in Science™, LLC

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Impact on STEM Education: An Overview of Sisters in Science™, LLC

Sisters in Science™, LLC addresses the need for urban girls and boys in elementary, middle and high school to gain equitable access to science education. Specifically, this need is based on the rising research-based public concern over the equity gap in science, mathematics, and technology. Sisters in Science™, LLC offers six innovative science programs designed to foster equity, access, and inclusion in science, technology, engineering, and mathematics (STEM) education [see figure 1]. Sisters in Science™, LLC recognizes the significant impact intervention programs targeting girls and boys can have on academic success. In every respect, Sisters in Science™, LLC accepts the call for systematic reforms that understand the limitations girls and boys face in postsecondary education and employment opportunities in these fields.

Figure 1: Programs of Sisters in Science™ LLC

As evidenced by 15 years of program development, implementation and research in the area of equity in science and math education, the Sisters in Science™, LLC programs have shown to significantly increase students achievement in science and mathematics. Collectively, the programs were developed and implemented as Sisters in Science Equity Reform Project™ (SISERP). Recognizing the success for boys who participated in the programs, Figure 1 depicts the programs expansion to Sisters in Science Equity Reform Project™-Brothers of Science Equity Reform Project™.
Recently awarded the American Association of Colleges for Teacher Education’s (AACTE) Equity Award in Leadership, SISERP programs have been nationally recognized for exemplary accomplishments in programs and innovations related to leadership development and equity and access in education. Through receipt of the award, the Sisters in Science™, LLC programs serve as a model for others in the profession, advancing the agenda for equity, access, and achievement in education.

Implementation of the programs was originally funded by the National Science Foundation, over fifteen years ago, the Sisters in Science™, LLC programs focus on the diversity inherent in learning through various tools by which scientific and mathematical principles can be explored, analyzed, and communicated. By employing multiple vehicles to engage their interests, girls and boys are encouraged to become researchers and to explore the underlying principles. Rather than relying on teachers as the primary transmitters of information, the girls and boys gather expertise and information from several sources and disciplines. Like everyone, girls and boys are confronted with problems and questions inside and outside of the structured classroom. What they may not be aware of is that tools such as sports and technology can open the door for scientific exploration and create a network of resources from which to gather information either as primary sources or as a supplemental source.

**Program Goals and Objectives**

The Sisters in Science™, LLC programs have been developed to address the issue of equality in science and mathematics. The six programs have been designed to impact students, their families, teachers and school administration. The primary goal of programs are to provide urban school aged girls and boys with access to meaningful science, mathematics, technology, and engineering instruction in an environment unencumbered by the restrictions.

The objectives of the Sisters in Science™, LLC programs:

1) Broaden the participation of girls and boys in science based disciplines academically and professionally.
2) Foster equitable and inclusive practices inherent in achievement across the curriculum.
3) Develop a fair and equitable policy for science and mathematics achievement for students.
4) Create relationships between educators and researchers to overcome the inequalities that exist within the educational system.

**The Sisters in Science™, LLC programs**

The Sisters in Science™, LLC programs were established in the interest of providing equitable avenues for all students to pursue academic success in STEM disciplines. Incorporated into the six programs are comprehensive science curricula based on national standards, equity focused professional development for pre-service and in-service teachers, family education programs, informal and formal science explorations, and educational components such as Saturday academies, summer camps, and after-school programs.

- **Early Sisters in Science™ (eSIS) - Early Brothers of Science™ (eBOS):** eSIS-eBOS is the early childhood program that targets Kindergarten through 2nd grades. The program focuses on using science as a vehicle for literacy development. The program focuses on
earth, life, and physical sciences. There are 150 science activities that are sequenced in five levels per science activity based on the child’s developmental level.

- **Sisters in Science™ (SIS) - Brothers of Science™ (BOS):** SIS-BOS targets the grade range of 3rd – 5th grades and focuses on the urban environment. The SIS-BOS program is a multifaceted educational intervention aimed at increasing young urban students’ interest and achievement in science and mathematics. There are five modules that have four to five lessons per module. The modules are: systems, constancy and change, models, scale, and science process skills. Program components include an in school program, after school program, teacher training, family education, and summer camp.

- **Sisters in Sports Science™ (SISS) - Brothers of Sport Science™ (BOSS):** SISS-BOSS targets 6th – 8th grade and focuses on the use of sports as a vehicle for science exploration. The program provides hands-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.

- **Sisters in Science in the Community™ (SISCOM) - Brothers of Science in the Community™ (BOSCOM):** The SISCOM-BOSCOM project creates a much needed link between science educators and community/faith based organizations. The program has been able to engage adolescents and their families in STEM activities during non-school hours. By fostering a supportive network among the university and community/faith based organizations, the project bridges formal and informal science education. Through a comprehensive hands-on, inquiry-based curriculum, program participants can take their heightened awareness in the sciences into the classroom.

- **INFO-Sisters in Science Career Opportunities Matter™ (iSIS.com) – INFO-Brothers of Science Career Opportunities Matter™ (iBOS.com):** The iSIS.com-iBOS.com program is an intense science program for urban high school girls and boys. Combining technology, hands-on science explorations, and a yearly research project, the girls and boys are introduced to a wide number of STEM related careers. In an effort to promote awareness, the program teaches the girls and boys the different aspects of scientific research. This intervention matches the girls and boys with mentors in science based careers. The scientists guide the girls and boys through the process of research and completion of their project.

- **Sisters in Science Dissemination and Outreach Project™ (SISDO) - Brothers of Science Dissemination and Outreach Project™ (BOSDO):** Sponsored by the National Science Foundation, the SISDO-BOSDO project has been developed as a clearinghouse for information critical to the reform of equitable teaching practices in STEM education. The dissemination project provides teachers and researchers with research based information promoting the “best practices” in a movement toward gender-equitable science education. Not only does the program support various publications specific to gender equity and
science education, it also sponsors a yearly national conference and monthly gender

equity focused professional development opportunities for classroom teachers.

Data Sources and Program Evaluation
The effectiveness of Sisters in Science™, LLC programs in achieving its goals/objectives,
targeting each constituency and addressing needs, is determined through internal and external
assessments employing multiple methodologies. The data sources used to evaluate the
effectiveness of the project and document success include surveys, pre- and post- test results,
standardized test results, focus groups, targeted interviews, and digital portfolios. The evaluation
process is designed to not only describe and evaluate what occurs, but to explain what succeeded
and why. This information offers the greatest potential to transform learning and improvement
achievement.

Evaluation instruments track and measure:
> Student achievement indicators in math and science
> Students’ awareness of STEM careers and college preparation requirements
> Families’ participation in science activities and attitudes toward and comfort with
STEM
> Youth workers’ comfort with teaching inquiry-based science
> Activities contributing to sustainability
> Effectiveness of capacity building activities
> Quality and quantity of professional development

SISS-BOSS Program Results¹:
Findings over the years show that the girls and boys in the program have increased their interest
and achievement in science and mathematics and have noted the relevance of these subjects to
the sports in which they have participated to date.

Table 1:
Pre- and Post-test Mean Scores and Standard Deviations for One School

<table>
<thead>
<tr>
<th>Sport/Science</th>
<th>N</th>
<th>Pre-test m</th>
<th>SD</th>
<th>Post-test M</th>
<th>SD</th>
<th>GAIN*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basketball/Motion</td>
<td>32</td>
<td>27</td>
<td>16.5</td>
<td>77</td>
<td>23.3</td>
<td>50</td>
</tr>
<tr>
<td>Fencing/Forces</td>
<td>40</td>
<td>39</td>
<td>21.4</td>
<td>86</td>
<td>14.2</td>
<td>48</td>
</tr>
<tr>
<td>Golf/Mechanics</td>
<td>50</td>
<td>34</td>
<td>19.4</td>
<td>93</td>
<td>8.6</td>
<td>59</td>
</tr>
<tr>
<td>Soccer/Mechanics/Engineering</td>
<td>35</td>
<td>28</td>
<td>19.0</td>
<td>88</td>
<td>12.2</td>
<td>60</td>
</tr>
<tr>
<td>Tennis/Geometry</td>
<td>52</td>
<td>29</td>
<td>22.1</td>
<td>84</td>
<td>17.3</td>
<td>55</td>
</tr>
<tr>
<td>Track (Field)/Aerodynamics</td>
<td>33</td>
<td>36</td>
<td>22.3</td>
<td>90</td>
<td>12.5</td>
<td>54</td>
</tr>
<tr>
<td>Track (Running)/Biomechanics</td>
<td>42</td>
<td>33</td>
<td>15.5</td>
<td>60</td>
<td>18.7</td>
<td>28</td>
</tr>
<tr>
<td>Volleyball/Aerodynamics</td>
<td>48</td>
<td>28</td>
<td>19.4</td>
<td>77</td>
<td>22.5</td>
<td>49</td>
</tr>
</tbody>
</table>

¹ Data is available for the other Sisters in Science™, LLC programs.
The SISS-BOSS curriculum is standards based and has an equitable focus. The entire curriculum includes 32 activities driven by science and mathematics standards that feature a sport as the vehicle through which science or mathematics is learned. Pre-tests were administered at the beginning of the day’s activity, and post-tests were administered at the conclusion of the day’s activity. The pre-tests and post-tests were identical instruments. Four questions were asked for each activity. The students’ responses were open-ended, allowing them to express their understanding of the content. Each question was scored as correct or incorrect.

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 show statistically significant mean increases in content knowledge from pre-test to post-test, ranging from 28 to 60 percentage points (\( p<.001 \) or \( p<.0001 \) in each case). Looking at these gains in a different way, in every case, the lower quartile on the post-test exceeded the upper quartile on the pre-test. All results from the after-school program and Saturday academies are summarized in Table 1.

Report card grades from the first and last marking periods were also compared. The \( t \)-test results showed that the students’ achievement in both science and mathematics increased significantly (\( p<.05 \)) during the year, pre to post.

Finally, it is important to note that of the sixth graders who completed the program, 67% returned as seventh graders. Furthermore, 54% of all students who completed the seventh-grade program returned to participate as eighth graders. These retention rates speak volumes about the students’ attitudes toward the program.

**Conclusion**

Sisters in Science™, LLC programs concentrate on the need for urban girls and boys to gain access to quality STEM education by utilizing a variety of approaches to foster equitable science education. Specifically, this need is based on the rising public concern over the equity gap in STEM education; recognition of the significant impact intervention programs targeting urban girls and boys have on school success; and the call for systemic educational reforms that recognize the obstacles urban students face in the academic and professional STEM arena. The programs respond to the call for systemic educational reform by creating innovative programs that provide access to strategies furthering gender equitable science education.
Selected Publications


Title: Teaching people with chronic pain to use hand self-Shiatsu to improve sleep: A pilot study.

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ABSTRACT

Teaching people with chronic pain to use hand self-Shiatsu to improve sleep: A pilot study.

OBJECTIVE: Difficulty falling asleep (sleep latency) and staying asleep (sleep maintenance) are common problems for persons living with pain. Research demonstrates that sleep problems are, in turn, related to exacerbation of chronic pain. There is a growing evidence-base for a range of pragmatic, non-pharmacological sleep interventions that can potentially be incorporated into pain management programs. This study looks at the outcome of teaching musculoskeletal pain patients standardized pre-bedtime hand self-Shiatsu (HSS) to reduce sleep latency.

METHODS: A case series design, with participants acting as their own controls, was selected to facilitate hypothesis generation for this novel, under-researched, intervention. Sleep efficiency, latency and maintenance, sleep beliefs, pain intensity and basic participant demographics were collected at baseline with actigraphy and standardized self-report questionnaires. After 1 week of baseline data collection, the HSS intervention was taught to participants. Follow-up data was collected at 2 and 8 weeks post-intervention.

RESULTS: Data collected at baseline and the two follow-up periods revealed no apparent changes in the objective actigraphy data. However a trend toward improved self-reported sleep latency (time to fall asleep) and sleep duration (time spent asleep) emerged. A number of participants reported they were more concerned with increasing their period of unbroken sleep as opposed to their total sleep time and it is possible that HSS may be useful to apply during nighttime awakenings as well as before bed. None of the participants reported adverse effects of the intervention. Participants did not report any problems learning the technique and demonstrated that the combination of hands on demonstration, take home manual and reminder phone calls was the most effective teaching approach.

CONCLUSION: These preliminary findings are promising and future studies exploring the mechanism of action and with stronger control of treatment fidelity are indicated.
Title: Master of Science in Occupational Therapy students' beliefs about attributes reflecting 'scholarship'

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ABSTRACT

Background: Master of Science in Occupational Therapy (MScOT) students regularly receive feedback commenting on the scholarship of their work. However, 'scholarship' is a conceptually complex term and lacks clear operationalization. This makes communication of expectation between professor and student at times difficult and unclear. For example, feedback on assignments in the form of "lacks scholarship" is of little value when the concept has not been clarified. The goal of this paper is to present the findings from a survey of MScOT students' beliefs about attributes reflecting 'Scholarship'.

Approach: A search of the literature retrieved no assessment tool that identified nor measured the attributes of scholarship. Consequently we developed an in-house tool based on the work of Hodge et al (https://www.miami.muohio.edu/documents/about-miami/presidenUreports-speeches/From_Inquiry_to_Discovery.pdf)

Findings: Ninety-three 1st year MScOT students completed the survey in the 1st week of their 2nd semester in the program.

Students showed strong endorsement for most attributes of scholarship identified on the survey. Areas that were less strongly endorsed included:
- Seeking knowledge outside of course requirements
- The ability to apply theory to inform clinical decision
- Generating innovative research questions based on clinical experience
- Selecting appropriate methods to address research questions
- Contributing to scholarly scientific manuscripts
- Matching research question to appropriate methods
- Identifying research paradigms congruent with professional theory and practice.

Discussion and conclusion: Currently we lack sufficient information to draw conclusion. The findings may reflect a potential lack of student understanding and confidence in applying theory-to-practice. Alternatively they may indicate a perceived lack of time/need to seek information outside of structured course content. A third possibility is that these students' results indicate that they have insufficient clinical fieldwork to appreciate the need for theory and scholarship in the clinical setting. More study is needed to understand the disconnect between students' and academics' interpretation of scholarship. With more study we will be able to guide strategies to improve the usefulness and perceived relevance of feedback.
full paper
The purpose of this study is aimed to explore the real conditions and effects of play in teaching Taiwanese Romanization for Grade 5 students, and to investigate the difficulties in the process and solving methods. Play is a motivational tool to encourage and stimulate learning and attention. Based on a case study, the subjects were a total of 53 students in grade 5 from 2 different schools, taught by a researcher. Throughout 13 weeks research, the data was collected and analyzed by means of classroom observation, interviewing the students, reflective journal, surveys of opinions from students and Taiwanese teachers and document analysis based on SPSS.

Research findings are summarized as follows:
1. By incorporating games into Taiwanese Romanization Spelling, the researcher found the interaction between the teacher and students, the students’ reaction to Taiwanese Romanization Spelling learning, and the performance to be very different from normal Taiwanese classes.
2. Playing games while teaching Taiwanese Romanization Spelling has 5 significant advantages, both in teaching and learning aspects:
   (1) Promoting the students’ participation in learning Taiwanese Romanization Spelling.
   (2) Increasing interaction between the teacher and students.
   (3) Changing the attitudes in learning and using Taiwanese Romanization Spelling.
   (4) Improving social ability by having play with classmates.
   (5) Examining learning impacts, and achieving the objective of repeated practice.
3. The researcher encountered and finally solved some difficulties in Taiwanese Romanization Spelling, and many differences between the students from dissimilar classes.
Based on the results as above, the suggestions for Taiwanese Romanization Scheme and further study were proposed.

Key words: Taiwanese Romanization Scheme, Action Research, Play, Integrated Teaching
Introduction

Language is part of culture and culture is delivered by language. Without written language, culture likes a plant will soon die. Cai Pei Huo proposed using Romanization Spelling in Taiwanese that Taiwanese will expand farther and farther. (Kōo, 2002 : 3) Taiwanese is sound writing or alphabet writing language, yet most of the people in Taiwan neglect it (Lim, 2005 : 4).

Mother tongue has become formal subject in all of the elementary schools in Taiwan since 2001, then Taiwanese Romanization Spelling started to be used and taught in 2006. We have surveyed more than a decade of Mother tongue teaching, in order to understand the learning problems they have faced and how they interact and use it. Most of the students don’t seem to like Taiwanese Romanization Spelling and some of them even dislike it, and therefore we tried to motivate them by using different teaching methods. The ability of Taiwanese Romanization Spelling will help them speak, read and write which is the foundation to expand Taiwanese and we must take care to preserve our national heritage. The purpose of this research is that we sought to use games in Taiwanese Romanization Spelling teaching and analysed the data to find out if it was useful and effective to improve the interest in learning Taiwanese Romanization Spelling.

Limitation of the Research

There is a once week curriculum which is only forty minutes in the whole class, indeed it is not enough to be familiar with Taiwanese for the students. Most of the students speak Taiwanese with family members or classmates but that is for oral speaking not using the Taiwanese Romanization Spelling system. It seems that most of the students are not familiar with it and even some of them change different Mother Tongue subjects every semester. In this research, there are two groups of grade five students from two elementary schools. Both the experimental group and the control group were taught by the same teacher at the same semester on different week day.

Purpose of this Research

The policy of Mother Tongue Education in Taiwan has existed for more than a decade in the elementary schools in Taiwan. The purpose of this research is to try and detect the effect on learning attitude and problems in Taiwanese

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1 There are more than sixteen Mother Tongues (dialects) in Taiwan, and the students have the right to change their Mother Tongue at the beginning of the semester. The spelling systems of all are different and this causes the students much trouble in learning.
Romanization Spelling. To discover the interest in learning the Taiwanese Romanization Spelling system in grade five students by using games and compare and analyse it between the experimental group and control group. We also wanted to solve insufficient teaching time\textsuperscript{2}, the skill of using Taiwanese Romanization Spelling system and motivation. We like to support another method of Mother Tongue teachers in teaching Taiwanese. Two sets of research findings provide an empirical background for this research. The first set of findings refers to the impact of the coherence of a text on comprehension and the second considers the benefits of active processing for learning.

Participants

The 53 participants are grade five students in the experimental group and the control group, living in Ba Dou area in Keelung. They were taught by the researcher during 13 weeks. The Experimental group has 23 students but one of them is a girl who has a learning disability, and the control group has 30 students. The researcher has no right to choose students in this research because of the students were placed in random access. This research was observed by the class’ preceptors during the 13 weeks.

\textsuperscript{2} Both of these elementary school have language classes as follow: Grade 1 to Grade 2 has 5 periods of mandarin, Grade 3 to 4 has 6 periods of mandarin which contain one period of reading comprehension and Grade 5 to Grade 6 has the same as Grade 3 to 4. We start teaching English in Grade 3, and the students are taught 2 periods once a week. On the other hand, we start teaching Taiwanese in Grade 1 but the students are taught one period once a week. Comparing the language subjects in Taiwan, Taiwanese faces the limitation of time which is hard to teach listening, speaking, reading and writing of Taiwanese well in forty minutes.
Most of the students’ mother tongue is Taiwan but 2 are Hakka and the rest of the 8 students have another mother tongue. Therefore 10 of the students’ families don’t speak Taiwanese at home, which means that the students didn’t have enough opportunity to hear or speak Taiwanese at home.

Procedure

Before the research began, all of the participants took the survey and pretests, and they also took the survey and posttests after being taught. During the 13 weeks, the researcher interviewed and counseled with the participants after each class which provided the researcher more information in order to adjust the games and curriculums in the following weeks teaching.

What is Play?

Play always happens in our daily lives, yet people don’t focus it. Some people think that play is part of our own amusement and it helps us to release the stress from real society (Tiunn, 2003:1). But why play? Learning is difficult for young kids, therefore play has an important role to the young kids. Play helps the young kids and teachers to dare with new knowledge. To participate in play, the young kids need to pay more attention in class which is motivation to the kids. John Adair described the words motive or motivation, however, suggest that something within you is at work, impelling or driving you forwards. And it may be a need, desire or emotion, but it leads you to act in a certain way. A motive, then, is an inner need or desire which is conscious, semi-conscious or perhaps unconscious that impacts on your will and leads to action of one kind or another. Of course you may have motives that do not issue any action. Play is the motivation to the young kids to learn new knowledge incidentally. Play is not only play for fun which plays an important role. Some provide more practice than the other, but some are not. Therefore we said that is the quality of play (Andrew Wright, 1984:3). Stipek refers to that motivation is relevant to learning because learning is an active process.
requiring conscious and deliberate activity. Even the most able students will not learn if they do not pay attention and exert some effort. If students are to benefit maximally from the educational curriculum, educators must provide a learning context that motivates students to engage in learning activities. Johan Huizinga\(^3\) provides another definition of play, which is explained in the sight of physiology. (Hairsh-Pasek, golindoff, Berk & singer, 2008; Tiůnn, 2003:1) Game and play has the necessary or useful function of science point which is accepted by people. Play continues to be taken seriously in the academic community, as evidenced by the scope of aspect scholarships across the human life span (Holzman, 2009; Hughes, 2010; Kuschner, 2009; Smith, 2010; Wood, 2013), across different contexts. Play and playfulness are considered to be lifelong activities: far from tailing off towards the end of childhood, play continues to develop in complexity and challenge (Broadhead, 2004; Wood, 2013). Most of the researchers are still trying to set up the definition of it because it indicates the potential variation and complexities of play as a social and cultural practice. Play activities involve a wide range of behaviours, actions and interactions, which may have multiple meanings for the player. Play can be regarded as deeply serious and purposeful, or trivial and purposeless. Play activities are motivation, creativity and learning, and they are given four types by researchers which are object play, pretend play, physical or rough-and-tumble play and guided play.

**Game is Play, Play is Game**

What exactly is play? Is it the same as game? Playing was created by children when they were not otherwise engaged in helping or learning. (Kim Brooking-Payne, 1996). According to Oxford Dictionary that game is a person’s performance in a game; a person’s standard of play; an activity that one engages in for amusement. Play is to engage in (a game or activity) for enjoyment; amuse oneself by engaging in imaginative pretence. Here we conclude game is play in Mandarin and Taiwanese. Jill Englebright Fox (2008) defines play, according to Webster's Desk Dictionary of the English Language, the word play has 34 different meanings. In terms of young children and play, the following definitions from Webster's are useful:

- light, brisk, or changing movement (e.g., to pretend you're a butterfly)
- to act or imitate the part of a person or character (e.g., to play house)
- to employ a piece of equipment (e.g., to play blocks)

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\(^3\) Johan Huizinga (Dutch: [ˈjoːɦɑn ˈɦœyzɪŋaː]; December 7, 1872 – February 1, 1945), was a Dutch historian and one of the founders of modern cultural history.
• exercise or activity for amusement or recreation (e.g., to play tag)

• fun or jest, as opposed to seriousness (e.g., to play peek-a-boo or sing a silly song)

• the action of a game (e.g., to play duck-duck-goose)

Moyles (2005, 4) clarifies general usage in English, play can be deemed to be a noun, verb, adverb, adjective – the play or plaything, as in drama and toys; to play in relation to method or mode; to undertake something playfully; or distinguish any one meaning which might be attached to children’s play; it makes more sense to consider play as a process which, in itself, will subsume a range of behaviours, motivations, opportunities, practices, skills and understandings, as we have witnessed in the initial cameo. Fergus P. Hughes (2000: 2) claims that for an activity to be described as play, it must contain five essential characteristics from Vandenberg. First, play is intrinsically motivated it is an end in itself, done only for the sheer satisfaction of doing it. A second, related characteristic of play is that it must be freely chosen by the participants. A third essential characteristic of play is that it must be pleasure. Children must enjoy the experience or it cannot be regarded as play. A fourth characteristic of play is that it is nonliteral. A fifth, play is actively engaged in by the player. The child must be involved, physically, psychologically, or both, rather than passive or indifferent to what is going on. Game and play both has same meaning in Taiwanese and Mandarin. People have played games all the time, yet people don’t focus in this part which happens in our daily life all the time.

Classical Theories of Play

Play theories are divided into classical theories of play and modern theories of play (Stagnitti, 2004, Mellou, 1994). Classical theories of play originated in the nineteenth century and tried to explain the existence and purpose of play (Mellou, 1994). According to Johnson & Christie (1987), the classical theories of play all originated before World War I. They try to explain why play exists and what purpose it serves. The classical theories include surplus energy, recreation, recapitulation and practice theories, yet they can be grouped into two pairs. Hughes (1995) states early play theories, those that appeared in the latter part of the nineteenth century and the early years of the twentieth, emphasized the biogenetic significance of play. That is, they described play as an instinctive mechanism that either promoted optimal physical development or reflected the evolutionary history of the human.

Surplus Energy Theory
The surplus energy theory of play can be traced back of Friedrich Schiller, an eighteenth century German poet, and to Herbert Spencer. An individual generates a certain amount of energy to meet survival needs. It means any energy left over after these basic needs have been met become surplus energy. This extra energy builds up pressure and must be expended. This explains why the surplus energy theory is still so popular today. Anyone who has seen young children run out to the playground after a long period of sedentary work in a classroom (Johnson & Christie, 1987). The reasons for play is surplus energy, to discharge the natural energy of the body and get the greatest physical benefits (Hughes, 1995).

Recreation Theory

The recreation theory proposed by the German poet Moritz Lazarus stated that the purpose of play is to restore energy expended in work. According to Lazarus, work burns up energy and creates an energy deficit. The energy can be regenerated either by sleeping or by engaging in an activity which is different from the work that caused the energy deficit. Play is the opposite of work and that is the ideal way to restore lost energy (Johnson & Christie, 1987). The reasons for play in renewal of energy or recreation theory is to avoid boredom while the natural motor functions of the body are restored, and it also gets the greatest physical benefits (Hughes, 1995).

Recapitulation Theory

Recapitulation theory was discovered by the scientists before this century, the human embryo develops and it appears to go through some of the same stages that occurred in the evolution of the human species. G. Stanley Hall, an American psychologist, extended recapitulation theory to children’s play. According to Hall, children reenact the developmental stage of the human race in their play: animal, savage, tribal member, and so on. These stages of play follow the same order that they occurred in human evolution (Johnson & Christie, 1987). Recapitulation is to relive periods in the evolutionary history of the human species and it gets physical benefits, too (Hughes, 1995).

Practice Theory

Practice theory was proclaimed by Philosopher Karl Groos who believed that play serves to strengthen instincts needed for the future. Newly born humans and animals inherit a number of imperfect, partially formed instincts that are essential for survival. Play offers a safe means for the young of a species to practice and perfect these vital skills. The purpose of play is to exercise and elaborate skills required for adult life (Johnson & Christie, 1987). Thus, play is to practice and prepare for the future adult life. Practice theory means to practice for adulthood and
also to develop skills and knowledge necessary for functioning as an adult which gets in physical and intellectual benefits (Hughes, 1995).

All the theories are either unrealistic or unreasonable because of limitation in those theories. Exceptions are found in each theory for example it is hard to explain why the children still want to play even they are exhausted in the surplus energy theory of play. The recreation theory declares the purpose of play is to restore energy expended in work for adults but adults do not need more play than children. Although the classical theories are not perfect, they are still important in the history of play and they are also the foundation stone of influence in modern theories of play.

Modern Theories of Play

Modern theories were developed after 1920 and these theories attempted to explain the role of play in child development (Stagnitti, 2004, Mellou, 1994). Modern theories of play amid an age dominated by the scientific method and positivism. Modern theories of play attempt to do more than simply explain why it exists. They also try to determine play’s role in child development and, in some cases, to specify antecedent conditions that cause play behavior. They also try to explain play’s role in different aspects of child development (Johnson & Christie, 1987, Ellis, 1973, Johnson, Christie & Wardle, 2005).

Psychoanalytic Theory

Sigmund Freud, the founder of psychoanalytic theory, believed that play has an important role in children’s emotional development. According to Freud (1996), play can have a cathartic effect, allowing children to rid themselves of negative feelings associated with traumatic events. Play allows the child to suspend reality and switch roles from being the passive recipient of a bad experience to being the one who gives out the experience (Johnson, 1987). Johnson, Christie and Wardle (2005), play can help children to deal with unpleasant events and can help prevent these experiences from disrupting the child’s emotional development. Play can have a cathartic effect, allowing children to rid themselves of negative feelings associated with traumatic events.
Cognitive Theories

Piaget\(^4\), Vygotsky\(^5\), and others gained prominence in the United States in the last 1960s. Piaget who is a prominent researcher in play theory and research. Between 1929 and the early 1959s. Piaget crafted a radically new theory of children’s intellectual development. According to Piaget’s theory, children engaged in types of play that correspond to their current level of cognitive development. When the children gain the ability to use symbols, they begin to engage in symbolic and constructive forms of play. Play’s role in learning and development in Piagetian theory is somewhat complex. On the one hand, his theory maintains that play, by its very nature, cannot contribute to new learning. Therefore Piaget (1963) stipulated that for learning and development to take place, it must be adaptation. That requires a balance between two complimentary processes: assimilation\(^6\) and accommodation\(^7\). Piaget also believed that play allows children to practice and consolidate recently acquire concepts and skills through accommodation. Because assimilation is stronger than accommodation, this practice is critical. Piaget considered this practice and consolidation role of play very important because many newly acquired skills and concepts would be quickly lost if they were not repeated and integrated with other skills and concepts during play. Vygotsky believed that play has a more direct role in cognitive development and young children are to be capable of abstract thought because of meaning and objects are fused together as one.

Arousal Modulation

Arousal Modulation is theory claimed by D.E berlyne, g. fein and H. Ellis, which is to keep the body at an optimal state of arousal, to relieve boredom and to reduce uncertainty. Arousal modulation gets emotional and physical benefits. One of the distinguishing features of play is that it is intrinsically motivated. It is done for no apparent reason other than the sheer satisfaction of doing it. The motivation for some behaviors, however, cannot be explained in terms of basic physiological needs; these behaviors include play and exploration of the environment. Human beings, and lower animals as well, play with and explore their surroundings simply because

\(^{4}\) Jean Piaget who was a Swiss psychologist crafted a radically new theory of children’s intellectual development. His theory took hold in the United States during the 1960s, proposed that children go through a series of distinct stages during which their thought processes become increasingly similar to those of adults.

\(^{5}\) Lev Vygotsky who was a Russian psychologist and he believed that play has several roles in cognitive development. At the most basic level Vygotsky (1976) believed that make-believe play has a key role in abstract thought, enabling children to think about meanings independently of the objects they represent. According to Vygotsky, very young children are in capable of abstract thought because for them meaning and objects are fused together as one.

\(^{6}\) Assimilation is the child to incorporate new information into exiting cognitive structure.

\(^{7}\) Accommodation is the child to modify existing cognitive structures to conform to the reality of the physical world.
they want to; there is no reason for these behaviors attempted to explain play, therefore, by referring to the concept of internat, rather than external, motivation, and more specifically to the concept of arousal modulation (Hughes, 1995).

Bateson’s Theory

Play, according to Bateson (Johnson, Christie and Yawkey1987), is paradoxical. Actions performed during play do not mean what they normally mean in real life. When children engage in play fighting, the blows delivered denote something very different from actual hitting. Before engaging in such play, children must establish a play “frame” or context to let others know that what is about to happen is play, that it is not real. If a play frame is not established, the other children will interpret the mock blows as a real attack and respond accordingly. When children play, they learn to operate simultaneously at two levels. At one level, they are engrossed in their pretend roles and focus on the make-believe meanings of objects and actions. Bateson’s theory has stimulated interest in communicational aspects of play, prompting psychologists to examine the messages that children use to establish, maintain, terminate, and reinstate play episodes. It has led to the discovery that children constantly shift back and forth between their pretend roles and their true identities while engaging in sociodramatic play.

The modern theories support and help us to understand more about play and they attract the children in learning positively by using play in teaching. The current trend is towards play in teaching language (Chan & Lin, 2000 : 123-147 ). Play follows the spirit of instruction theory. In the processing of play, children are able to think in order to win the play without any certain model. Play is flexible to settle the problems they have met during the play. Mother tongue is a new subject in Taiwan and play in teaching Taiwanese Romanization Spelling will provide an active, happy and interesting environment for the children to learn it. It becomes naturally with listening, speaking, reading and writing. Shalva (2002) declares the purpose of play in teaching, play is not only play which leads all the students get involved in class activity and learning. The Taiwanese Romanization Spelling System needs more practice and skill to learn, play not only can help the children learn it without stress but also stimulate the motivation of learning.

Why Play is Important?

Fox (2008), indicates that both Fromberg and Gullo (1992) described play enhances language development, social competence, creativity, imagination, and thinking skills. Frost (1992) concurred, stating that "play is the chief vehicle for the development of imagination and intelligence, language, social skills, and perceptual-motor abilities in infants and young children” (Frost,1992,p. 48).
Jill also mentions that when children play, they draw upon their past experiences—things they have done, seen others do, read about, or seen on television—and they use these experiences to build games, play scenarios, and engage in activities. Children use fine and gross motor skills in their play. They react to each other socially. They think about what they are doing or going to do. They use language to talk to each other or to themselves and they very often respond emotionally to the play activity. The integration of these different types of behaviors is key to the cognitive development of young children. Therefore play is a very effective vehicle for learning.

Play and Cognitive Development
Jill Englebright Fox (2008) also indicates that the relationship between play and cognitive development is described differently in the two theories of cognitive development which dominate early childhood education—Piaget's and Vygotsky's.

Piaget (1962) defined play as assimilation, or the child's efforts to make environmental stimulus match his or her own concepts. According to the previous statement about Piagetian theory that holds play, in and of itself, does not necessarily result in the formation of new cognitive structures. Piaget claimed that play was just for pleasure, and while it allowed children to practice things they had previously learned, it did not necessarily result in the learning of new things. In this view, play is seen as a "process reflective of emerging symbolic development, but contributing little to it" (Johnsen & Christie, 1986).

In contrast, Vygotskian theory states that play actually facilitates cognitive development. Children not only practice what they already know—they also learn new things.

Parten's Five Types of Play
Play for young children assumes many different forms. Mildred Parten (1932) was one of the early researchers studying children at play. She focused on the social interactions between children during play activities. Parten's categories of play are not hierarchical. Depending on the circumstances, children may engage in any of the different types of play. Parten does note, however, that in her research with two-to five-year-olds, "participation in the most social types of groups occurs most frequently among the older children" (Parten, 1932: 259).

- Onlooker behavior—playing passively by watching or conversing with other children engaged in play activities.
- Solitary independent—playing by oneself.
- Parallel—playing, even in the middle of a group, while remaining engrossed in one's own activity. Children playing parallel to each other sometimes use each other's toys, but always maintain their independence.
• Associative—When children share materials and talk to each other, but do not coordinate play objectives or interests.
• Cooperative—When children organize themselves into roles with specific goals in mind (e.g., to assign the roles of doctor, nurse, and patient and play hospital).

Play is as important as water to fish, sunshine to plants, therefore play also plays a chief role in learning to children. It attracts and guides them to focus in learning new things, which leads them to dare with new knowledge, thus they learn how to be independent and cooperative in class.

Play, Games, Creativity, Problem Solving and Effect of Play

Play and play behaviours which take the important role, as Moyles (2005) claims that grappling with the concept of play can be analogized to trying to seize bubbles, for every time there appears to be something to hold on to, its ephemeral nature disallows it being grasped. Play and learning for young children are inextricably linked, the one often leading into the other. Research evidence has demonstrated that children’s level of involvements and engagement in play activities is an important indicator of their current level of development and learning and potential needs. Involvement and engagement being understood as ‘active participation’ (Moyles, 2005, Odem et al., 2004) that is ‘intrinsically motivated’ and ‘exhibited…’

Play and Language Teaching

Janet R mentains that Levy (1984) strongly supported the relationship play and language, on her conclusion she claimed that play is effect in learning languages and it also stimulates the expansion and creation of language learning. Play provides more language practicing and using and encourages language literacy. How play improves children’s language literacy, in her evidence of play, children’s language ability is expanded. Language includes phonology is concerned with pronunciation, syntactic consists of words and patterns components, semantic-language notes to use it properly and pragmatics is effective interaction. Play to children is automatic and free product, it is provided with great imagination, creation, curiousness and mentality. The distinguishing characteristics of play in teaching are interesting, competition, cooperation, education and proper challenge, in which need to match with intrinsic quality of education, otherwise play is play without goal. Therefore, a good teacher needs to know the connection between play and language teaching well in order to provide a joyful way to learn for the children.
Playing Games in Teaching Taiwanese Romanization Spelling

Moyles (2005,7) claims children have less and less time for play outside school, therefore play is import to attract children to pay attention in class.

- Play is important for children but it’s hard to justify to the mind and other teachers.
- Children really get fed-up with the pressure- they do need to play more.
- They learn better through practical, first-hand experiences but...
- Children’s social skills would be improved if we could provide more play.
- It’s important to give them some choice when they’ve finished their tasks.
- Children do tire of sitting down and need something active.
- They love doing messy things and I know I need to achieve a balance.
- I do believe that children learn through play but the world provides the written record.

For young children play and learning are inextricably linked, the one often leading into the other. Using play or games in teaching combines with activities, motivation and interesting which leads children up the garden path (Kang,2007:13-14) Play in leaning focuses on the purpose in children’s learning, the central idea to design play, games or activities is children according to the four parts of language learning ( Su,1999 : 3-4).

1. Listening: The output to input, sound from the teachers transmits from ears to children’s brain which is the nature teaching procedure.
2. Speaking: No matter children like or dislike, they have to speak to get involved with play.
3. Reading: Children participate with activites which use the reading ability to compete with the other competitors.
4. Writing: Writing is an easy task while children are playing games the writing ability is incidentally brought up.

In also indicates( In,2003 : 12-15 ) that using play or games in teaching will keep the interest of children to learn Taiwanese Romanization Spelling System. Therefore, she concludes five aspects of play in teaching. A first, children feel tired after a long time learning Taiwanese Romanization Spelling System, thus they do not pay attention in class or they feel low during class. If teachers support the children a game or an activity in the certain time, they will feel high. A second, play highlights teaching: when teachers explain again and again, the children may not understand Taiwanese Romanization Spelling. Thus we use play and review to improve the children’s Taiwanese Romanization Spelling ability. A third, let the children get used to speak Taiwanese fearlessly while they are having activities in
class. A fourth, teamwork is the major part of play or games. The children help each other no matter they have different ability when they play games. Under the stimulus of this inspiring motive, children bustle about with new energy and team spirit. A fifth, warm up is opening, reviewing, closing and powerful method to use. Even small and easy game brings the children in the learning situation.

Action research encourages the researchers to quest, discuss and judge through repeating thinking and practicing teaching procedure in order to understand the teaching situation then solves the problem and improves it (Tshuà, 2000:1). The way action research work is very systematical and scientific, and it is flexible policy to adjust and amend the educational problem. Action research combines action and research together which tries to shorten the theories and practical experience (Tshuà, 2000:6). The teachers are researchers and real workers, not only do they realize how to teach effectively, but also judge when they get involved with teaching. Schon indicates (1983; 1987) the teachers in action research are counselors, social psychologists and environment engineers. Each child may have different problems in class, in which come from individual family or personal pressure, thus good teachers know all the factors in learning and help the children instantly. Richard claims teaching is full of challenge and complexity and the distinguishing characteristic are as following (Richard D. Parsons, Stephanie Lewis Hinson, Deborah Sardo-Brown, 2002:7-10).

1. Teaching is Action

What is the main concept of teaching? We define teaching is as action. Teaching produces or inspires learning activity, in fact it embraces a professional specialty in each subject and transmits by teachers. How to lead children from the paper of books to be the part of children’s studying? Effective and professional teachers should set the goal of teaching and activities, organize the class then they interact with the children to understand and help them. If the classroom rules have been set, the children will well know with them and follow the steps of learning from the teachers. Again, effective and professional teachers should prepare well in their specialty in subjects to be ready for transmitting knowledge.

2. Teaching is art and science.

A teacher who knows how to teach effectively may not be an effective teacher because he must know how to transmit the curriculum which children would like to learn at first. E.W. Eisener (1982) indicates that a professional teacher not only designs a scientific curriculum but also teaches in artistic procedure. Richard claims that a successful teacher is a person of determination during the teaching activity. A teacher faces to different situation of teaching
contents, teaching methods, classroom management and adjusting dissimilar students immediately in order to attract the children attention in learning.

3. Statistics is Analysis Language

In many researches, statistics analyses are usually used to present the result. Statistics analyses tell significance to explain the difference of the data and prove the correlation between collection data and variance by no means fortuitous. Gân defines statistics is to collect, display, analyze, coordinate and explain the samples which infers the population and makes a scientific decision in the uncertain situations.

4. Teachers are the Action Researchers

J.T. Breuer (1993) suggests to improve education that correlation between researches and professional teaching should get closer. Teachers make the model of teaching through the unique in their researches. Doing researches and building the theory and making clear decision are on the basis of knowledge, experience, effective teaching method and making a self-examination by the teachers after teaching. Finding effective teaching methods is as important as a thoughtful research. A successful teacher must be the action researcher.

5. Teacher Student Truth Experience Action Reflection Experience Action Context Evaluation: A Practical Approach

According to reflect, judge and make decision, teachers are the action researchers who not only do the researches but also interact with the children. Thus an effective teacher should be an active participant and observer to proceed and explain the information he has collected during his teaching in class. To understand what he has done the procedures and to know why he has done them by reflecting and evaluating himself.

6. Actional Research

Work through the action research, an effective teacher is a professional teacher who proposes all sorts of hypotheses to explain, adjust, evaluate and amend his research. If he has collected as much as information and data then it is possible to proceed his actional research.

Wittrock & Farley (1989) claim that education is connected with psychology. The learning principles, evaluation of learning and practical teaching experience, in fact
that if a professional teacher is an artist, he requires more theories in his researches. Why does a teacher need more theories? J.T. Breuer (1993) indicates that theories bring out the function to fit researches.

Sir. Isaac Newton found Universal Gravitation help us why the apple falls down on the ground. Because of Universal Gravitation, the astronauts flew to the moon and transmitted the view of the moon on TV. We should realize the theory leads inventions and let us understand psychology in order to use in education. (Breuer, 1993; Richard D., 2002: 18)

Action research is a method in different styles that you use to achieve any data by the researchers who are interested in different topics. Play or game in Taiwanese Romanization Spelling teaching is a research on the purpose to help children learn Taiwanese Romanization Spelling happily and effectively.

The Teacher's Role

Jill Englebright Fox (2008) indicates the early childhood teacher is the facilitator of play in the classroom. The teacher facilitates play by providing appropriate indoor and outdoor play environments. Safety is, of course, the primary concern. Age and developmental levels must be carefully considered in the design and selection of materials. Once appropriate environments and materials are in place, regular safety checks and maintenance are needed to ensure that the equipment is sound and safe for continued play.

Teachers also facilitate play by working with children to develop rules for safe indoor and outdoor play. Discussion about the appropriate use of materials, the safe number of participants on each piece of equipment, taking turns, sharing, and cleaning up provides the children with information to begin their play activities. These discussions need to be ongoing because some children may need frequent reminders about rules and because new situations may arise (e.g., new equipment). Richard (2002: 22) also claims that researcher’s role and mission in actional teaching. On the first, teachers are the action researchers who don’t have to be professors and they have their unique researches to model their own teaching. On the second, teachers require their research data carefully in order to aim at their study. On the third, teachers are the classroom observers and action researchers. They are objectivity and qualify to observe and record what they have seen in the classroom.

According to the benefits of play in teaching, we have used it in action research in Taiwanese Romanization Spelling. In order to attract the children in class we design games in the curriculums, drill and demonstrate the games before class, and discuss the problems after teaching. Among the 13 weeks teaching, we finally collect the data from experimental group and contro group. The data is analyzed by using SPSS.
The children take the pre-test and post-test before teaching and after 13 weeks of teaching.

Score of Achievement Evaluation Test

Data processing and analysis

Two experimental groups of students before and after consonants, vowels, terminal sounds, tone, spelling and overall performance summary, previous results for covariates, single-factor analysis of the covariates.

Total of variables in the analysis, relevance of the inspection were variable and dependent variable in each group is the same, namely regression test of the homogeneity assumption within the group. Results as shown in table 6-3-1, as shown in the consonants, vowels, terminal sounds, tone, spelling and overall performance variables are in line with the Group's assumption of regression homogeneity ($f(1,49)=0.17, \text{and} 0.91, \text{and} 0.48, \text{and} 0.14, \text{and} 1.77, \text{and} 0.08, p>.05$).

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</table>

Results and discussion

(A) experimental treatment effect

About experimental treatments on the consonants, vowels, terminal sounds, tone, spelling and overall performance impact of two experimental groups of students of the scoring summary, previous results for covariates, measured after scoring as
the dependent variable, covariates of single factor analysis results as shown in table 6-3-2, and table 6-3-3 shows.

Table 6-3-2 subjects in each group

All variables before and after measuring the average and standard deviation

<table>
<thead>
<tr>
<th></th>
<th>Pro-test</th>
<th>Post-test</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N  M SD</td>
<td>M  SD</td>
</tr>
<tr>
<td>consonants</td>
<td></td>
<td></td>
</tr>
<tr>
<td>experimental group</td>
<td>23 9.74 4.56</td>
<td>14.09 4.65</td>
</tr>
<tr>
<td>control group</td>
<td>30 8.67 4.71</td>
<td>10.60 6.04</td>
</tr>
<tr>
<td>vowels</td>
<td></td>
<td></td>
</tr>
<tr>
<td>experimental group</td>
<td>23 6.61 4.41</td>
<td>13.91 5.83</td>
</tr>
<tr>
<td>control group</td>
<td>30 4.33 4.70</td>
<td>8.73 6.84</td>
</tr>
<tr>
<td>terminal sounds</td>
<td></td>
<td></td>
</tr>
<tr>
<td>experimental group</td>
<td>23 3.39 4.28</td>
<td>8.17 4.67</td>
</tr>
<tr>
<td>control group</td>
<td>30 2.33 2.52</td>
<td>5.80 5.13</td>
</tr>
<tr>
<td>tone</td>
<td></td>
<td></td>
</tr>
<tr>
<td>experimental group</td>
<td>23 3.13 2.94</td>
<td>13.04 5.42</td>
</tr>
<tr>
<td>control group</td>
<td>30 3.13 2.25</td>
<td>8.40 7.92</td>
</tr>
<tr>
<td>spell</td>
<td></td>
<td></td>
</tr>
<tr>
<td>experimental group</td>
<td>23 5.91 3.79</td>
<td>16.00 3.41</td>
</tr>
<tr>
<td>control group</td>
<td>30 4.93 6.19</td>
<td>5.87 4.90</td>
</tr>
<tr>
<td>the overall performance</td>
<td></td>
<td></td>
</tr>
<tr>
<td>experimental group</td>
<td>23 28.78 12.47</td>
<td>65.22 17.29</td>
</tr>
<tr>
<td>control group</td>
<td>30 23.4 18.46</td>
<td>39.4 24.34</td>
</tr>
</tbody>
</table>
Table 6-3-3 shows, in addition to outside terminal sounds ($f(1,50)=2.08$, $p>.05$), with the remaining consonants, vowels, tones, spelling and overall performance in the experimental treatment groups were significant ($f(1,50)=4.46$, and4.95, and5.86, and84.77, and21.85, $p<.05$), shows pre-test score effects of exclusion, two experimental groups of students on the consonants, vowels, tones, phonics and overall performance test scores, significant differences still exist. A walk between the groups compared to the adjusted average (see table 6-3-4), accept Play in Teaching Taiwanese Romanization Spelling experimental group of consonants, vowels, tones, spelling and overall performance scores were significantly higher than the control group students (13.78>10.84, and12.67>9.70, and13.04>8.40, 15.78>6.04, 62.09>41.80).

Table 6-3-3 subjects in each group

<table>
<thead>
<tr>
<th>Sources of variation</th>
<th>$SS'$</th>
<th>df</th>
<th>$MS'$</th>
<th>$F$</th>
<th>$\eta^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>consonants</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shared variables</td>
<td>336.92</td>
<td>1</td>
<td>336.92</td>
<td>13.55*</td>
<td>213.</td>
</tr>
<tr>
<td>Experimental group</td>
<td>110.80</td>
<td>1</td>
<td>110.80</td>
<td>4.46*</td>
<td>028.</td>
</tr>
<tr>
<td>vowels</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shared variables</td>
<td>1275.14</td>
<td>1</td>
<td>1275.14</td>
<td>59.49*</td>
<td>543.</td>
</tr>
<tr>
<td>Experimental group</td>
<td>106.08</td>
<td>1</td>
<td>106.08</td>
<td>4.95*</td>
<td>090.</td>
</tr>
<tr>
<td>terminal sounds</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shared variables</td>
<td>127.43</td>
<td>1</td>
<td>127.43</td>
<td>5.59*</td>
<td>100.</td>
</tr>
<tr>
<td>Experimental group</td>
<td>47.53</td>
<td>1</td>
<td>47.53</td>
<td>2.08</td>
<td>040.</td>
</tr>
<tr>
<td>tone</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shared variables</td>
<td>69.99</td>
<td>1</td>
<td>69.99</td>
<td>1.46</td>
<td>028.</td>
</tr>
<tr>
<td>Experimental group</td>
<td>280.86</td>
<td>1</td>
<td>280.86</td>
<td>5.86*</td>
<td>105.</td>
</tr>
<tr>
<td>Spell</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shared variables</td>
<td>341.66</td>
<td>1</td>
<td>341.66</td>
<td>23.66*</td>
<td>321.</td>
</tr>
<tr>
<td>Experimental group</td>
<td>1224.45</td>
<td>1</td>
<td>1224.45</td>
<td>84.77*</td>
<td>629.</td>
</tr>
<tr>
<td>The overall performance</td>
<td>15378.01</td>
<td>1</td>
<td>15378.01</td>
<td>64.77*</td>
<td>564.</td>
</tr>
<tr>
<td>Errors</td>
<td>14457.83</td>
<td>50</td>
<td>289.16</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* $P < .05$
Table 6-3-4 subjects in each group
All variables Post-test adjusted average, and afterwards

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Adjusted average</th>
<th>After comparing</th>
</tr>
</thead>
<tbody>
<tr>
<td>consonants</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Experimental group</td>
<td>23</td>
<td>13.78</td>
<td></td>
</tr>
<tr>
<td>control group</td>
<td>30</td>
<td>10.84</td>
<td>Experimental group &gt; control groups</td>
</tr>
<tr>
<td>vowels</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Experimental group</td>
<td>23</td>
<td>12.65</td>
<td></td>
</tr>
<tr>
<td>Control group</td>
<td>30</td>
<td>9.70</td>
<td>Experimental group &gt; control groups</td>
</tr>
<tr>
<td>terminal sounds</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Experimental group</td>
<td>23</td>
<td>7.93</td>
<td></td>
</tr>
<tr>
<td>Control group</td>
<td>30</td>
<td>5.99</td>
<td></td>
</tr>
<tr>
<td>Tone</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Experimental group</td>
<td>23</td>
<td>13.04</td>
<td></td>
</tr>
<tr>
<td>Control group</td>
<td>30</td>
<td>8.40</td>
<td>Experimental group &gt; control groups</td>
</tr>
<tr>
<td>Spell</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Experimental group</td>
<td>23</td>
<td>15.78</td>
<td></td>
</tr>
<tr>
<td>Control group</td>
<td>30</td>
<td>6.04</td>
<td>Experimental group &gt; control groups</td>
</tr>
<tr>
<td>The overall performance</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Experimental group</td>
<td>23</td>
<td>62.09</td>
<td></td>
</tr>
<tr>
<td>Control group</td>
<td>30</td>
<td>41.80</td>
<td>Experimental group &gt; control groups</td>
</tr>
</tbody>
</table>

Conclusion

Overall, using play in teaching Taiwanese Romanization Spelling improved the organization and clarity of learning Taiwanese in the four aspects that it was implemented in. Students indicated that they had a better understanding of Taiwanese Romanization Spelling and were able to write about each word in a more concise and deliberate manner. After the research, we are concluded that play helps children to learn Taiwanese Romanization Spelling and even Taiwanese. The
researchers found out using play in teaching Taiwanese Romanization Spelling has 5 significant advantages, both in teaching and learning aspects as mentioned in the summary as following:

(1) Promoting the students’ participation in learning Taiwanese Romanization Spelling.
(2) Increasing interaction between the teacher and students.
(3) Changing the attitudes in learning and using Taiwanese Romanization Spelling.
(4) Improving social ability by having play with classmates.
(5) Examining learning impacts, and achieving the objective of repeated practice.

The researchers encountered and finally solved some difficulties in Taiwanese Romanization Spelling, and many differences between the students from dissimilar classes. We also suggest that the teachers who are teaching Taiwanese Romanization Spelling should use play in their teaching or expand it in other subject teaching. Building a data base of games for the education departments should be a priority.
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國家圖書館全國博碩士論文資訊網 http://etds.ncl.edu.tw/theabx/index.html
九年一貫鄉土語言教育「台語羅馬字教學進修網站」
http://iug.csie.dahan.edu.tw/TG/TGLMJ/index.htm
台語羅馬字問題解答 http://tlgmj.lib.nttu.edu.tw/Kauhak/FAQ/faq.htm
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Appendix:

1. Taiwanese Romanization Spelling: Education Department of Taiwan 2006

   The chart of Taiwanese consonants description

<table>
<thead>
<tr>
<th>Bilabial</th>
<th>p</th>
<th>ph</th>
<th>m</th>
<th>b</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tip of tongue</td>
<td>t</td>
<td>th</td>
<td>n</td>
<td>l</td>
</tr>
<tr>
<td>Tip of back</td>
<td>k</td>
<td>kh</td>
<td>g</td>
<td>ng</td>
</tr>
<tr>
<td>Tip of tongue</td>
<td>ts</td>
<td>tsh</td>
<td>s</td>
<td>j</td>
</tr>
<tr>
<td>single vowel</td>
<td>a</td>
<td>i</td>
<td>u</td>
<td>e</td>
</tr>
<tr>
<td>diphthong</td>
<td>ai</td>
<td>au</td>
<td>ia</td>
<td>iu</td>
</tr>
<tr>
<td>nasal vowel</td>
<td>m</td>
<td>ng</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>vowel terminal sound</th>
<th>am</th>
<th>an</th>
<th>ang</th>
<th>im</th>
<th>in</th>
<th>ing</th>
<th>iam</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>ian</td>
<td>iang</td>
<td>iong</td>
<td>un</td>
<td>uan</td>
<td>uang</td>
<td>oong</td>
</tr>
<tr>
<td>nasal vowel</td>
<td>ann</td>
<td>inn</td>
<td>unn</td>
<td>enn</td>
<td>onn</td>
<td>ainn</td>
<td>aunn</td>
</tr>
<tr>
<td></td>
<td>iann</td>
<td>iunn</td>
<td>ionn</td>
<td>iaunn</td>
<td>uann</td>
<td>uinn</td>
<td>uainn</td>
</tr>
<tr>
<td>h terminal sound</td>
<td>ah</td>
<td>ih</td>
<td>uh</td>
<td>eh</td>
<td>oh</td>
<td>auh</td>
<td>iah</td>
</tr>
<tr>
<td></td>
<td>iuh</td>
<td>ioh</td>
<td>uah</td>
<td>uih</td>
<td>ueh</td>
<td>iauh</td>
<td>uaih</td>
</tr>
<tr>
<td>p terminal sound</td>
<td>ap</td>
<td>ip</td>
<td>iap</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>t terminal sound</td>
<td>at</td>
<td>it</td>
<td>ut</td>
<td>iat</td>
<td>uat</td>
<td></td>
<td></td>
</tr>
<tr>
<td>k terminal sound</td>
<td>ak</td>
<td>ik</td>
<td>ok</td>
<td>iak</td>
<td>iok</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Resource from Education Department of Taiwan 2006
2 Picture of Pretest

3 Picture of Play: Touching the colors variation1
Picture of Play: Touching the colors variation 1

Picture of Play: Touching the colors variation 1
6 Picture of Play: Touching the colors variation2

7 Picture of Play: Bomb
8 Picture of Play : Tornado

9 Picture of Play: Take or Give
10 Picture of Play: Face Drawing

11 Picture of Play: Jenga
ID301
THINKING MAPS IN ENGLISH WRITING PROJECT FOR TAIWANESE ELEMENTARY
STUDENTS
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full paper

● Teaching goal: Improving students' writing skills by using Thinking Maps.
● Maps: Bubble Maps, Tree Maps, and Flow maps.
● Teaching time: 2 weeks for 5 times of teaching.
● Students: A class of students who have been learning English for more than 2 years.
  ◆ The students have the same ability in grammar and literacy, but they are not in the same age group. They have learned simple present tense, present continuous tense, past tense, past continuous tense, and future tense. Although they have known the tenses which are mentioned, they are still not ready to write a good essay by themselves. Thinking Maps provide a good way to build writing structures and get ideas together. It will be a good chance to use Thinking Maps.
● Teaching Materials: The students have learned the idea of the 3R's and have learned how important it is to protect our earth.

Map of the concepts
Warm up.
Activity: Let’s think about it!
Props: coins
Instructions:- Brainstorm and work together in a group.
-Talking with partners, take turns to flip a coin. Heads=move one step. Tails= stand still. Answer the question for the circle you land on. The first one to stand on the finishing square is the winner.

Start

What are you wearing?

Name five items which your partner wears.
Think of three accessories.

Name five adj.

Finish
Writing Activity
Lesson one
Activity-Recycling Doll

- Vocabulary teaching:
  - Warm up before you teach the new vocabulary including reviewing phonics which you may use in the writing.
- Activity: Let’s Change it!
- Have two teams or more in your class. Have students stand at the front of the classroom and let them observe each other for one minute. After one minute they can point out the difference of each other’s appearances. It doesn’t matter if they use single words or sentences as long as they can sound it out.

Prepare props that you want on the table. The students may use the props which you have prepared. Allot 3 minutes to play this game.

- SETUP: Talk with the class how important the 3R’s are and then discuss how to recycle, how to protect our earth and the students can make their toys without paying. Brainstorm together for all kinds of various objects that you can recycle at home or from friends instead of throwing away.
- BUBBLE MAPS AND TREE MAPS DEMO: Have students call out objects to recycle as you write them on the board. When you have enough objects, you may draw a doll in a bubble and let the students come up one at one time to fill the part of a doll. When you are finished, ask the class what other kinds of things they can use to make a recycle doll. Encourage creativity.
- DO: Pass out paper and read through the different materials on the board together. Let the students know that they can use these or other things to draw their doll. Put students in pairs or small groups. You are a supervisor as you walk around the classroom to listen to them. Students should have chances to discuss what they want to make and what things they can use to make it before they start drawing their own doll.
- WRAP: Let groups come up front and tell the class about their doll: what it is made of and what it is special.
- Make Your Own Doll
cans  string
Buttons  bottles
newspapers  sticks
Clothes                                other things
Draw a robot from recycled trash.

- Lesson two
- Writing Activity: Brainstorming
- BUBBLE MAPS AND TREE MAPS DEMO: Let students call out objects to recycle as you write them on the board. Introduce Bubble Maps and Tree Maps to the students then demo the maps on the white board. First draw a big bubble to
write the topic which you would like to demo. Second, ask the students the 6 WH questions draw more Bubble Maps on the white board to write down the ideas. (figure2-6) When you have enough ideas, start to write down key words or objects which the students need to make. You can let students come up one at a time and fill different Bubble Maps on the board. When you have more information, you may draw Tree Maps on the board to fill with more items.

- **DO:** Pass out paper and markers and read through the different Bubble Maps and Tree Maps together. Let the students know that they can use these or other things to draw their maps. Put students in pairs or small groups. When you are finished, guide students how to use the Bubble Maps and Tree Maps to show their ideas from their mind by themselves. Encourage creativity. Students should discuss what they want to make themselves and what other things they can use to make it before they start drawing their own maps. While the students are drawing their own map, you may walk around the classroom and help them as soon as you find them.

- **WRAP:** Let groups or individual students come up front and tell the class about their Bubble Maps and Tree Maps. You may give them more ideas.

- **Make Your Own Doll**

- **SET UP:** Review the ideas students came up with for in the ‘Brainstorming’ activity and discuss things you can recycle & what we can make with them. Write the questions from the hand out on the board.

---

**Thing we can make from recycled trash:**

<table>
<thead>
<tr>
<th>a recycle robot</th>
<th>a paper lantern</th>
<th>a paper toy gun</th>
</tr>
</thead>
<tbody>
<tr>
<td>a newspaper kite</td>
<td>a newspaper mask</td>
<td>a piggy bank a book holder</td>
</tr>
</tbody>
</table>

The following chart can be used to practice the students’ oral ability and share the ideas from their classmates. When they have the images and ideas from their classmates, they would create more imagination in their essay writing.
<table>
<thead>
<tr>
<th>What do you want to make?</th>
<th>What do you want to make?</th>
<th>What do you want to make?</th>
</tr>
</thead>
<tbody>
<tr>
<td>a doll</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>What recycled materials will you use?</th>
<th>What recycled materials will you use?</th>
<th>What recycled materials will you use?</th>
</tr>
</thead>
<tbody>
<tr>
<td>buttons, string, a sock, newspapers</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>What other things do you need?</th>
<th>What other things do you need?</th>
<th>What other things do you need?</th>
</tr>
</thead>
<tbody>
<tr>
<td>glue, markers, scissors, tape, needle, strings, cotton</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
After they ask the other classmates, they can draw Bubble Map as following.

### Bubble Maps

- **Writing Activity Lesson 3**
- **SET UP**: Review the ideas students drew Bubble Maps with in the previous “Brainstorming” activity. Make sure what students want to make, what recyclable items they have to use to make it, and what other things they need to make it. Write the 5 parts of an essay on the board as following:

  1. **Topic**
  2. **Introduction**
  3. **Body: First Paragraph**
  4. **Body: Second Paragraph**
  5. **Conclusion**

- **DEMO**: Talk about the different parts of the essay with the class: The ‘topic’ is the name of the essay. The “Introduction” is short paragraph which contains 3 or 4 sentences. The ‘bodies’ are very long; we write a lot of things to support the previous paragraph in the ‘body’ and give more information for it. The ‘conclusion’ is maybe explain what function a conclusion stress. Go ahead and review the word ‘paragraph’: the introduction, bodies and conclusion are all
paragraphs. You can also review the words ‘indent’ and ‘indentation’.

- **DO: Thinking Maps Essay Planning:** Take out the hand outs and read the questions in the outline paragraph. Read the Flow Maps together. Show how each paragraph has an ‘indentation’ of 5 spaces. After the class has read it. Go back over the questions and let the students answer the questions orally using the hand out. For the ‘Second Paragraph’, have the students underline the words ‘First, Second, Third, Then, After that’, and ‘Last,’ in the essay. Do make the sentences longer, have the students circle the conjunctions.

**Thinking Maps Essay Planning**

<table>
<thead>
<tr>
<th>How to Make a Recycled Doll</th>
<th>Topic</th>
</tr>
</thead>
<tbody>
<tr>
<td>How to Make a Recycled Doll</td>
<td>Top</td>
</tr>
</tbody>
</table>

**** Last week there was a recycle art show at school on Earth Day. Our teacher lead us to the world of recycling by making something out of recycled items because it was our responsibility to protect the planet where we live. Then our teacher told us to make a new thing with the recycle materials.

**Introduction**

**** Making a new thing all by myself without paying? I didn’t know what to make, so I thought for days. I walked to Auntie Annie’s house to ask her for help. When Auntie Annie gave me some ideas, I saw a pile of old clothes she wanted to recycle. There were old socks with holes in them on the pile. I walked over to look at it, then the idea came out of my mind that I could make a sock doll! I picked up the socks and thought about what other things I needed to make a doll. I took some recycled strings to fill into the body. Next, I found some old buttons for eyes and some brown string for hair in Auntie Annie’s bedroom. I even got a pair of sunglasses from her. I felt so excited that I went home quickly to make my doll. I ran into my bedroom to get markers, scissors, glue and tape. I was ready to start making my own doll.

**** First, I used a red marker to draw the shape of a doll on the sock. Second, I used the scissors to cut the shapes. Then I sewed the shapes together. Third, I used a black marker to draw a mouth, a nose and ears. After that, I sewed the buttons on for eyes. I cut the brown string into short pieces and glued them on for hair. After that, I tucked the old cotton into its body. The color of the eyes didn’t look great, so I put on the old sunglasses to make them
more beautiful. Last, I put my hand into the recycled doll. It was so cute!

Body

****It was amazing to me after I finished making my doll. I had a new toy without paying anything for it! Making the doll was a fun thing to do, too. My classmate said that my doll was really great. She liked it at once. If I have some free time, maybe I will make one for her.

Conclusion

● On Your Own: Let the students decide what they are going to make and guide them as they fill in their Thinking Maps. They can use one of the ideas from the Brainstorming activity, or they can think of something new to write about. If they are slow at deciding, you can encourage them to write ideas down.

● Use Thinking Maps to condense the demo essay.

● On Your Own: Lesson four

Pretend that you are finished making your recycled art. Please use the past tense and your Thinking Map to write your essay.

<table>
<thead>
<tr>
<th>Topic</th>
<th>How to Make a Recycled__________</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Introduction</th>
</tr>
</thead>
<tbody>
<tr>
<td>What did you make?</td>
</tr>
<tr>
<td>Why did you make it?</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Body: First Paragraph</th>
</tr>
</thead>
<tbody>
<tr>
<td>What recycled things did you use to make it?</td>
</tr>
<tr>
<td>Where did you find them?</td>
</tr>
<tr>
<td>What other things did you use to make it?</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Body: Second Paragraph</th>
</tr>
</thead>
<tbody>
<tr>
<td>What recycled things did you use to make it?</td>
</tr>
<tr>
<td>Where did you find them?</td>
</tr>
<tr>
<td>What other things did you use to make it?</td>
</tr>
</tbody>
</table>
Conclusion
How did you feel after you made it?
Who did you show it to? What did he/she say?

- Lesson four-Use your own map to write your essay.
- You may use Flow Map to write the main questions on each paragraphs.

- Conjunctions- Encourage your students to use conjunctions to write longer sentences.
Lesson five- Proofread the finished essay and rewrite it again. If there are any mistakes, then have your students revise their essay. Encourage each student to come up to the front and read their own essay to everyone.

Activity: Read out loud. Have the students in two teams, first ask them to name their team, then you may start your game. Set time for five minutes, then set the students in order. When the game starts, the first student from each team needs to come to the front and read their essay to everybody and it turns to the second one from team. When the time is up, the students who are at the front reading have to do some funny things, for examples, they may tell a joke or sing a song.

Goal of teaching:
1. The students can use the words and patterns they have learned.
2. The students can understand the demo reading.

3. Improving reading comprehension ability and having fun in reading and writing.

4. The students would like to use English to express themselves.

5. The students can write the essay by using Thinking Maps easily.

Grading the essay

1. On-line grading of the essay – Criterion is Educational Testing Service which was created by ETS Technologies, Inc.

2. Grading by the teachers: We can follow the grading system seen in figure 1. From figure 1 was created by a group of professors from Taiwan to be used for the College Entrance Examination In Specified Subjects. Therefore, the total scores of essay writing will be 20 points, as soon as we have the scores then we should have them times five to get the final scores.

Interview

After using Thinking Maps, I interviewed and quested my students about English writing problems they have faced. There are 17 students in this class and all of them thought English writing was a difficult job to do. After using Thinking Maps for 2 writings they have changed their feeling about English writing. 15 students thought Thinking Maps are connected with each other and form a whole. While they are writing by using the maps, they feel it becoming easier and clearer. Thus they are confident to finish writing their own essays. Only two students have different opinions, one student still thinks writing is not easy and the other thinks that she is confused about the maps. Most of the students think Thinking Maps are clear and they can list more ideas on the maps. Instead of imitation writing, most of the students can have more thoughts by using Thinking Maps. I think if all the students practice more and they will be skillful writer.
All of the students thought that English writing is not easy. They started writing after they had been learning English for one and half years, they looked at me with a puzzled frown and it took a long time to finish writing.

After introducing Thinking Maps to the students, they had more ideas and could organize their concepts together.
There are two students who still have problems with using Thinking Maps. One still feels confused and the other one is still worried about writing. It takes time to learn a new way which can help them in English writing.

Reference
Path to Proficiency Preview Packet

Software form Thinking Map 2.06

大考閱卷中心英文寫作閱卷標準

寫作是運用特定語言的書寫符號將意念表達出來的一個歷程，不但具有最高階整合內化學習功能，還能培養邏輯力、組織力、思考力和創造力。一般文章基本結構可分為三個部份：開頭（introduction）、正文（body）以及結論（conclusion）。大考中心九十八學年度大學學科能力測驗成績單中，英文作文零分人數比例超過一成五，此現像對於英文非母語的台灣來看，大部份學生學習英文單字、片語、文法和句型等基本英文能力後，將所學腦力激盪後透過計畫（planning）、轉譯（translating）和檢視（reviewing）等歷程構思成一篇有效寫作（effective）的能力仍有再進步的空間。

人工閱卷標準
而在寫作的評分上，即使寫作技巧相近的兩個人，對於寫作主題的理解程度不同亦會影響寫作出的文章品質。一篇寫作的優劣，以教師批改主導檢查詞類、標點符號、句型時態等基本文法外，亦強調寫作中段落的一致性、文章的連貫性、結構邏輯性和整體統一性。

而大考中心97年評量考生撰寫英文作文能力，採整體式評分，如表1：英文作文總分20分，標準分為五等級：19-20分為特優級、15-18分為優級、10-14分為可級、5-9為差級分、0-4分為劣級，閱卷委員於閱讀完考生試卷後，於腦海裡產生一個整體（holistic）分數，再以分項式評分標準檢閱是否符合整體印象分數。

傳統人工閱卷雖有評分指標的客觀標準，但評分老師對於主題的了解的主觀認定也會影響評分寫作成績的差異，大考中心為使各閱卷委員評分標準一致，共聘請公、私立大學英文相關科系教授含正、副召集人共147位擔任閱卷委員，並分為12組，先後召開「英文科閱卷評分標準訂定會議」與「評分標準再訂定會議」，先就4000多份隨機抽取的考生答案卷詳加討論、分析、草擬評分標準原則，再對評分標準進行討論與修正，待評分共識一致後方進行正式閱卷工作，首次正式閱卷第一日下午4時，加開「第二次評分標準再訂定會議」，再度確定評分標準，並另外提供合選題卷作為參考，盼能更掌握閱卷之品質。若一、二閱分數差距超出許可範圍（英文作文大於5分），則由第三閱（由正/副召集人或協同主持人擔任）評分，以求閱卷之合理性與公平性。

Figure 1 表 1：英文作文分項式評分指標

<table>
<thead>
<tr>
<th>grade\item</th>
<th>優</th>
<th>可</th>
<th>差</th>
<th>劣</th>
</tr>
</thead>
<tbody>
<tr>
<td>excellent</td>
<td>OK</td>
<td>bad</td>
<td>wrongly use</td>
<td></td>
</tr>
<tr>
<td>個</td>
<td>主題（句）清楚切題，並且具體、完整的相關細節支持，文組織重點分明，有開頭、發展、結尾，前後連貫，轉承語使用適當。(5-4分)</td>
<td>主題不夠清楚或突顯，部分相關敘述發展不全，主觀安排不妥，前後發展比例與轉承語使用欠妥。(2-1分)</td>
<td>文不對題或沒寫，（凡文不對題或沒寫者，其他各項均以零分計算）。(0分)</td>
<td></td>
</tr>
<tr>
<td>組織</td>
<td>重點分明，有開頭、發展、結尾，前後連貫，轉承語使用得當。(13分)</td>
<td>重點安排不妥，前後發展比例與轉承語使用欠妥。(2-1分)</td>
<td>全文毫無組織或未按提示寫作。(0分)</td>
<td></td>
</tr>
<tr>
<td>(54 分)</td>
<td>(44 分)</td>
<td>(34 分)</td>
<td>(24 分)</td>
<td>(14 分)</td>
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<td>---</td>
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</tr>
<tr>
<td>文法</td>
<td>全文無文法錯誤，且文句結構富變化。</td>
<td>文法錯誤少，且未影響文意之表達。</td>
<td>文法錯誤多，且明顯影響文意之表達。</td>
<td>全文文法錯誤嚴重，導致文意不明。</td>
</tr>
<tr>
<td>句構</td>
<td></td>
<td>(3 分)</td>
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<td>(2-1 分)</td>
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<tr>
<td>字彙</td>
<td>用字精確、得當，且用字錯誤少。</td>
<td>字詞單調、重複，用字偶有不當。</td>
<td>用字、拼字錯誤多，但不影響文意之表達。</td>
<td>只寫出或抄襲與題意有關的零碎字詞。</td>
</tr>
<tr>
<td>拼字</td>
<td>用字、拼字錯誤多，但不影響文意之表達。</td>
<td></td>
<td>(2-1 分)</td>
<td>(0 分)</td>
</tr>
<tr>
<td></td>
<td>(3 分)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>體例</td>
<td>格式、標點、大小寫無錯誤。</td>
<td>格式、標點、大小寫有錯誤，但不影響文意之表達。</td>
<td></td>
<td>(1 分)</td>
</tr>
<tr>
<td></td>
<td>(2 分)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1. 96 指考英語科閱卷籌備會議資料，改編自張武昌等（民93）「英文寫作能力測驗規劃研究（VI）」資料來源：台北大考中心

**數位評改方法—Criterion 線上即時批改軟體**

Criterion 為由美國教育測驗服務社（Educational Testing Service，簡稱 ETS）的分支機構－ETS 科技公司（ETS Technologies, Inc.）所研發。經過十多年研究線上評分軟體 e-rater，並以超過130 萬份的 GMAT 試卷進行實驗，每題採取一人及一電腦評分，經證實兩者吻合度達 98%後，便以 e-rater 為評分核心發展作文練習用軟體 Criterion 提供引導式作文 (Guided Writing) 線上練習。

相較於人工閱卷的繁複，Criterion 是以網際網路為基礎的線上英文作文練習暨評分軟體，不需額外下載任何軟體至電腦，直接透過網際網路進入 Criterion 網站即可使用 Criterion 進行寫作練習與文章評分。
figure 2 Students work out with Tree Maps.

figure 3 Thinking Maps on the board
figure 4 Thinking Maps from one of the student

figure 5 Thinking Maps from one of the student
figure 6 Thinking Maps from one of the student

figure 7 Luke’s Essay

How to Make the recycle Robot

My teacher told us to use junk make something, because making things is making new something. I was very afraid and worry because I couldn’t make something well this draw was hardest. If I knew very back, my family will really angry.

Just then, my friend was bright. I can use the broken computer and one bottle, water, and cans. So I went to the store to buy paint, scissors and markers to make the robot.

First, I used the broken computer and drew the mouth, second I used button for eyes. Third, I used bottles for legs. Then, I used cans for legs. After that, I used my hair to its face. It was so ugly.

Today, my trials said it was cool. I was very happy. It can make his work. We can play robots. This big not is very good. It took me make robot and it gave me a new toy.
figure 8 Luke’s Essay and his Thinking Maps

figure 9 Bubble Maps and Tree Maps
figure 10 Writing after using Thinking Maps

Yesterday, I looked many newspapers in my bedroom. I got an idea could use a newspaper, a box and a man to make my toy.

First, I cut the newspaper. Second, I glued the can for eyes. Then, I could use the black marker to draw hair. Third, I could use the red marker to draw the nose. For that, I glued the box for nose. The nose look so boring, so I black marker draw more interesting. Last, I looked my new toy!

I could have a free toy. It is my new toy. I will give my friend because her birthday is on May 21. I think she will very much.

figure 11 Vivian’s Essay and her Thinking Maps
The Second English Writing Project

Try to use Thinking Maps and guide students who have never learned English writing before. I would like to see the effect on Thinking Maps for the freshmen.

- Teaching goal: Introduce English writing to the students by using Thinking Maps.
- Maps: Bubble Map and Tree Map
- Teaching time: 2 weeks for 4 times of teaching.
- Students: Two class of grade 6 students who have been learning English for more than 2 years in Zhin Bin elementary school.
  - The students have the same ability in grammar and literacy, and they are in the same age group. They have learned simple present tense, present continuous tense. The students have never tried to write an essay before, this is the first time they learn how to write an English essay. Thinking Maps provide a good way to build writing structure and get ideas together. It will be a good chance to use Thinking Maps.
- Teaching Materials: According to the reading “Owl At Home” The students enjoy the world of English essay writing.

Writing Activity
Lesson one
- Vocabulary teaching:
  - Warm up before you teach the new vocabularies including reviewing phonics which you may use in the writing.
  - The grade 6 students have learned short vowels, long vowels and some consonants blends.
  - The literacy ability is limit because they have learned about 300 words. Through they haven’t learned a lot, it’s a great opportunity for them to try writing.
- Owl At Home: Read together with whole class and ask the students questions about the reading.
- Reading Activity: Relay Race Reading! Divide the class into two teams. Set 3 minutes then everyone reads one page. When the time is up the winner team gets 5 points. Make sure the students read correctly.
- Bubble Maps and Tree Maps Introduction: You show the students Bubble Map and ask 6 “WH” questions then you write down the main idea from the story.
Writing Activity: Lesson two-Brainstorming

- BUBBLE MAPS AND TREE MAPS DEMO: Review the story again. Let students call out objects from the story as you write them on the board, or you may help them. Introduce Bubble Maps and Tree Maps to the students then demo the maps on the white board again. First draw a big bubble to write the topic which you would like to demo. Second, ask the students the 6WH questions and draw more Bubble Maps on the white board to write down the ideas. You can let students come up one at a time and fill different Bubble Maps on the board. When you have more information, you may draw Tree Maps on the board to fill with more items. So far you may expand the students’ group words.

- DO: Have the students talk about their ideas. Pass out paper and markers and read through the different Bubble Maps and Tree Maps together. Let the students know that they can use these or other things to draw their maps. Put students in pairs or small groups. When you finished, guide the student how to use the Bubble Map and Tree Map to show their ideas from their mind by themselves. Encourage creativity. Students should discuss what they want to write about before they start drawing their own maps. While the students are
drawing their own map, you may walk around the classroom and help them.

- WRAP: Let groups or individual students come up front and tell the class about their Bubble Maps and Tree Maps. You may give them more ideas.
- Ask more information or share ideas each other.
- Sentence Build Up by using Conjunctions- Introduce your students how to use conjunctions and how to write the sentences longer.
- SET UP: Review the ideas students came up with for in the ‘Brainstorming’ activity and discuss the person or thing that they want to write.

![Diagram of Conjunctions](image)

- Writing Activity- Lesson three
- SET UP: Review the ideas students drew Bubble Maps with in the previous “Brainstorming” activity. Make sure what students want to make, what recyclable items they have to use to make it, and what other things they need to make it. Write the 5 parts of an essay on the board as following:

6. **Topic**
7. **Introduction**
8. **Body: First Paragraph**
9. **Body: Second Paragraph**
10. **Conclusion**
DEMO: Talk about the different parts of the essay with the class: The ‘topic’ is the name of the essay. The “Introduction” is short paragraph which contains 3 or 4 sentences. The ‘bodies’ are very long; we write a lot of things to support the previous paragraph in the ‘body’ and give more information for it. The ‘conclusion’ is short maybe explain what function a conclusion stress. Go ahead and review the word ‘paragraph’: the introduction, bodies and conclusion are all paragraphs. You can also review the words ‘indent’ and ‘indentation’.

DO: **Thinking Maps Essay Planning:** Have the students take out their Thinking Maps and read the main ideas together. Think about the person they want to write about and use Thinking Maps to make an outline. Show how each paragraph has an ‘indentation’ of 5 spaces. After the class has read it. Write down the Imitation writing on the board then go back the questions and let the students answer the questions orally using the map. For the ‘Second Paragraph’, have the students think more word to tie the underline the words and use Bubble Maps of Conjunctions to show them the concepts of ‘First, Second, Third, Then, After that’, and ‘Last,’ in the essay. Do make the sentences longer.

---

**Thinking Maps Writing Draft**

***Is At Home***

<table>
<thead>
<tr>
<th>Topic</th>
</tr>
</thead>
<tbody>
<tr>
<td>A character is at his/her _________ _______. He/She is ______ _____ and he/she</td>
</tr>
<tr>
<td>name</td>
</tr>
<tr>
<td>wants to _______.</td>
</tr>
<tr>
<td>Verb</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Introduction</th>
</tr>
</thead>
<tbody>
<tr>
<td>He/She is sitting by the fireplace because it is ______ _____ and ______</td>
</tr>
<tr>
<td>adv.</td>
</tr>
<tr>
<td>outside. First he/she eats ______ and ______ but he/she is still very hungry.</td>
</tr>
<tr>
<td>noun</td>
</tr>
<tr>
<td>Then he/she wants to eat _________. After he/she eats ______, he/she feels ______</td>
</tr>
<tr>
<td>noun</td>
</tr>
<tr>
<td>Then he/she _____________, he is alone _________. He/She starts to _______ for 2</td>
</tr>
<tr>
<td>verb</td>
</tr>
</tbody>
</table>
Body Paragraph

Finally he/she is _______ _______, he/she_________. It is a __________ night at home.

adv.    adj.           verb          adj.  

Conclusion

Writing Activity- Lesson Four

On Your Own - Imitation writing: Let the students decide what they are going to write and guide them as they fill in their Thinking Maps. They can use one of the ideas from the Brainstorming activity, or they can think of something new to write about. If they are slow at deciding, you can encourage them to write down some ideas.

After Writing: Encourage your students come up to the front and read their own essay and some of them may not write well but tell all the students that they have done a great job for the first time in writing, they will be better and better if they keep trying to write. Although this isn’t a long essay, this is good experience for them to get closer to the world of writing. A good beginning will help the freshmen.

Grading the essay: When you grade the essay, you may treat your students nicely. As the students try to write the first time, encouraging and motivation is more important than anything else. Once your students are interested in writing, they will learn more and write more.

Goal of teaching:

1. The students can use the words and patterns they have learned. Help the students build up their sentence. 能應用學過的單字、句型
2. Students group words into the appropriate categories as a way to analyze and gain a better understanding of the vocabulary. 能組織字彙、分析字彙、瞭解字彙用法
3. The students can understand the story. 能理解文章大意
4. Improving reading comprehension ability and having fun in reading and writing for the beginner. 閱讀理解力佳，樂於接觸
5. The students would like to use English to express themselves. 願意以英語表達想法
6. The students can write easily the essay by using Thinking Maps.
Grade 6 class’ Analysis

There are 23 students in this class and that’s the first time they have written an essay. They haven’t got any chance to try before in the elementary school, I questioned them after they learned how to use Thinking Maps.

Most of the students think Thinking Maps are useful tools which help their writing structure but six students still think writing is really difficult to them. Therefore, I look up for the reason. Those students’ English grades are under achievement and some of them have phonics and grammar problem in learning English. I have only taught this class for one year and I should have asked the previous English teacher. Since the previous English teacher had transferred to the other school for a few years, I haven’t got any information to find the reason.
Most of the students study in English cram schools in Taiwan. From the chart it is obvious that Thinking Maps make the students feel writing is not hard.

- **Conclusion**
  
  As you know, most of the students go to English cram school when they are having English course at school, yet their writing ability isn’t built up. It is hard to hold the ideas in our brain and Thinking Maps help the teacher save time. Instead of wasting time and having poor ideas that Thinking Maps will help most of the students in developing good structure providing more and more ideas for them to use in their own essay writing. We should follow to see the effective results after using Thinking Maps in English writing.
figure 1 Bubble Maps for the main idea

figure 2 Bubble Maps and Tree Maps for Adjectives and Places
figure 3 Bubble Maps for Conjunctions
figure 4 One of the students finished Bubble Maps
figure 4 Thinking Maps on the board

figure 5 Imitation Writing

Toby is at home.

Toby is so hungry and he wants to eat.

He is sitting by the fire place because it is so cold and snowy outside.

First he eats butter toast and peasoup.

He is still very hungry then he wants to eat pizza.

After he eats pizza, he feels good.

Then he plays a game. He is lonely because...
figure 6 One boy finished his Bubble Maps and Tree Maps
figure 7 OWL AT HOME
figure 8 Barry’s Thinking Maps and outline the ideas from the story

figure 9 Writing in the classroom
figure 10 Writing in the classroom

figure 11 Ivy's imitation writing
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Website
http://thinkingmaps.com/
OELA/NPD Grantees’ Issues of Requirements, Recruitment, Retention, Results, and Reality when Implementing Professional Development Grants

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Authors’ Note

The projects discussed in this paper were funded by the U.S. Department of Education, Office of English Language Acquisition, National Professional Development Grants.

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Abstract

In this paper, four distinct U.S. Department of Education’s Office of English Language Acquisition/ National Professional Development Grantees discuss five common challenges and strategies for addressing those identified challenges as they seek to implement all facets of their programs. The authors of this paper begin with a brief overview of the literature review as it pertains to the national scene as well as provide a context for professional development in the states of Arizona and Alaska, the two states in which the four grants are administered. The authors then provide descriptions of each of the projects, Teachers of English Language Learners Learning Community (TL³C), Academic Content Combined with English in Secondary Schools (ACCESS), Teaching English Learners Academic Content (TELAC), and Project LEAP (Language, Equity and Academic Performance). The identified issues of program requirements, recruitment, retention, results, and reality are subsequently addressed as are strategies for addressing each of these challenges. The authors conclude by providing suggestions for further consideration.
OELA/NPD Grantees’ Issues of Requirements, Recruitment, Retention, Results, and Reality when Implementing Professional Development Grants

The U.S. Department of Education sponsors a National Professional Development Program (NPD) through the Office of English Language Acquisition (OELA). According to the U.S. Department of Education (2014), the “program provides professional development activities intended to improve instruction for students with limited English proficiency (LEP) and assists education personnel working with such children to meet high professional standards.” Furthermore, grants are made to Institutions of Higher Education (IHEs) that have entered into consortium arrangements with State Education Agencies (SEAs) or Local Education Agencies (LEAs). Projects sponsored by NPD grants are designed to increase the pool of highly qualified teachers prepared to serve limited English proficiency students and increase the skills of teachers already serving them.

In this paper, four distinct OELA/NPD Grantees discuss five common challenges and strategies for addressing those identified challenges as we seek to implement all facets of our programs. The authors of this paper begin with a brief overview of the literature review as it pertains to the national scene as well as provide a context for professional development in Arizona and Alaska, the two states in which the four grants are administered. The authors then provide descriptions of each of the projects: Teachers of English Language Learners Learning Community (TL³C), Academic Content Combined with English in Secondary Schools (ACCESS), Teaching English Learners Academic Content (TELAC), and Project LEAP (Language, Equity and Academic Performance). Issues of program requirements, recruitment, retention, results, and reality are subsequently addressed as are strategies for addressing each of these challenges. The authors conclude by providing suggestions for further consideration.
Literature Review

A National Perspective

Increasing numbers of students from culturally and linguistically diverse backgrounds represent both a challenge and an opportunity to reformulate our current understanding of teacher professional development (Lee & Buxton, 2013; National Center for Education Statistics [NCES], 2002; Rumberger & Gándara, 2004). Specifically, the needs of students in public schools must be addressed in ways that are culturally sustaining (Paris, 2012). This approach involves an inclusive pedagogy that is open to the multiplicity of voices and ways of knowing represented in diverse classrooms. Concurrently, there is a national need for qualified P-6 professionals in the areas of ESL (English as a Second Language) and Science, Technology, Engineering, and Mathematics (STEM) (Nadelson, Seofert, Moll & Coats, 2012; Lee, & Maerten-Rivera, 2012). According to Lee (2011) more English Language Learners (ELLs) select to enter STEM careers than their native speakers counterparts. Consequently, there is a growing need of teachers who can foster the academic and English language proficiency of ELLs. In the current climate of global competition, it behooves those involved in the critical analysis of our educational system to consider issues of underrepresentation of diverse students and design support systems that ensure equitable representation of diverse populations across occupation and career pathways.

Views from Arizona

In Arizona it is estimated that there are 150,000 ELLs, which accounts for 13 percent of all K-12 students. Of those hundred fifty thousand, 90,657 (60%) were enrolled in 20 districts statewide (Arizona Department of Education, 2009). Although particular districts have high concentrations of ELLs, 210 of the existing 238 districts in Arizona reported ELL enrollment in
2006. Arizona’s educational environment for ELLs differs from many other states across the country (Davenport, 2008).

In response to the growing number of Latino English Language Learner students, Proposition 203 (English for the Children, A.R.S. § 15-751-755) passed in Arizona in 2000. This law significantly changed the classroom instructional practices for English Language Learners (ELLs) by severely restricting the options for native language instruction. A small number of bilingual programs continue to operate in Arizona through waiver provisions outlined in A.R.S. § 15-751-755. The text of English for the Children statute states that, “English learners shall be educated through sheltered English immersion during a temporary transition period not normally intended to exceed one year.”

Moreover, in 2006, the Arizona English Language Learners Task Force developed and adopted a 4-hour English language development (ELD) block as an instructional format through which to implement the Sheltered English Immersion (SEI) statutory mandate (A.R.S § 15-756.01) within the state’s English Language (i.e., English-only) classrooms. The subsequent SEI model requires that ELLs receive instruction for a minimum of four hours daily during the first year that they are classified as Limited English Proficient and continuing until classified as English proficient. Specific times (ranging from 15 to sixty minutes) are allocated for each area based on AZELLA proficiency levels, the English proficiency test mandated by the Arizona Department of Education.

**Teacher preparation in Arizona.** Since the establishment of restrictive language policies and the subsequent mandating of the 4-hour ELD block, the quality of teacher preparation with regard to ELL instruction has also been significantly impacted. The new requirements in accordance with Proposition 203 state that all persons who currently hold a valid
K-12 Arizona teaching certificate must obtain a provisional SEI endorsement (Mahoney et al., 2005). However, de Jong, Arias and Sanchez (2010) state that whereas Bilingual (BLE) and English as a Second Language (ESL) teachers had previously been required to take from 24-27 units of preparation, the new endorsement only required 6. This effectively dropped the number of preparation hours for teachers of ELLs from between 360 and 405 hours to merely 90. This mandate translates to approximately only 10% of the preparation time previously considered necessary to serve these students effectively. To further aggravate the issue, de Jong, Arias and Sanchez (2010) also explain that most teacher preparation in Arizona currently focuses only on increasing teacher knowledge of state policies related to SEI. Very little time is allotted to providing teachers with deep knowledge of second language acquisition (Arias & Markos, 2012).

Many new as well as experienced teachers demonstrate little knowledge of effective practices in second language education, including the integration of students’ primary language in the classroom and an understanding of how language proficiency impacts learning (Garcia et al., 2010). Although several studies have examined pre-service teachers’ beliefs about ELLs and their knowledge of the effective practices they should implement in the classroom (Olson & Jimenez-Silva, 2008), whether or not new teachers can negotiate implementing effective strategies with the minimal training they receive within current restrictive language policies is questionable.

Research shows that teachers with good preparation and pedagogical skills (Haycock, 1998; 2001) as well as full certification in their field (Darling Hammond, Chung, and Frelow, 2002; Darling-Hammond, Holtzman, Gatlin, & Heilig, 2005) make a positive difference in student achievement. It remains debatable however, whether 90 hours constitute good preparation and pedagogical skills when working with ELLs. Although all teachers in Arizona
are mandated to take classes addressing the needs of ELLs, several essential elements are missing from SEI endorsement as it currently exists in Arizona. With a heavy focus on strategies, there is little emphasis on addressing teachers’ dispositions towards ELLs, experiences with language diversity (Arias & Markos, 2012), and second language acquisition theory (Arias & Markos, 2012). The SEI focused teacher preparation does not fully prepare teachers to meet the multifaceted needs of ELLs (Wright, 2012).

The Alaska Context

Alaska has one of the densest ELL populations in the United States, as verified by the National Clearinghouse for English Language Acquisition, and yet only .0085%, (128 out of approximately 15,000) of Alaska’s currently certified K-6 teachers hold an ESL endorsement (as verified by the State’s EED Teacher Certification on May 3, 2011). This exemplifies the disparity between the number of ELLs in our classrooms and teachers with the language, literacy and content backgrounds to meet their needs. Similar statistics hold true for Alaska Native students. The disconnect between the intellectual capabilities of our ELL and Indigenous children and the knowledge valued and assessed by the public school systems creates the pernicious and fabricated gap that characterizes the rhetoric of education. It behooves those involved in educational reform at the K-12 and post-secondary levels to take action.

Schools are a powerful mechanism for linguistic and cultural revitalization (Fishman, 1991; Hinton, 2001). The question is how can schools become centers for language and culture revitalization as well as academic achievement in our western contexts? One way of achieving this goal is by embracing the principles and practices outlined in the literature of Culturally Responsive Schooling (CRS) (Castagno & Brayboy, 2008; Gay, 2000; Ladson-Billings, 2004; Villegas & Lucas, 2002) and Culturally Sustaining Pedagogy (CSP) (Paris, 2012). By definition, CRS involves “using the cultural knowledge, prior experiences, frames of reference, and
performance styles of ethnically diverse students to make learning more relevant and effective for them” (Gay, 2000, p. 29). Paris (2012) expands the ideas of CRS in his notion of culturally sustaining pedagogy, “This research and the pedagogical, curricular, and teacher learning innovations it forwards is interested not in relevance or responsiveness, but in sustaining and extending the richness of our pluralistic society. Such richness includes all of the languages, literacies, and cultural ways of being that our students and communities embody—both those marginalized and dominant” (p. 96). Our work is based in CRP and we expand it to Paris’s concept of CSP through our collaborations with teachers in our partner districts. Project LEAP is designed to train teachers to work in culturally sustaining ways in order to address equity and academic performance through language. The children of Alaska deserve no less.

**Teachers of Language Learners Learning Community (TL³C)**

The Teachers of Language Learners Learning Community (TL³C) Project is designed to focus on teaching and learning that empowers pre- and in-service teachers to effectively work with English language learners in underserved communities using pedagogical practices that support bilingualism. While the reality of linguistic diversity in our schools provides rich opportunities for language learning, it also presents a need for highly qualified teachers and programs to ensure that all students are provided with an equitable education. Initiated by Mesa Community College (MCC), the TL³C Project has partnered with local elementary school districts, university teacher preparation programs, and professional organizations to address the following related goals:

1. to increase the pool of highly prepared teachers of language learners (TLLs), and
2. to provide support for TLLs in various programs at local Title I schools.

To accomplish goal one, this project creates opportunities that aim to:
• develop highly qualified pre-service teachers who will complete coursework for their full
  Structured English Immersion (SEI) endorsement (required in Arizona) and their
  provisional ESL endorsement prior to transferring to the university to complete their
  elementary education degree with a full English as a Second Language (ESL) or
  Bilingual Education (BLE) endorsement and
• train and support higher education faculty in various disciplines who instruct pre-service
  teachers in effective teaching strategies and best practices for diverse learners.

To accomplish goal two, this project creates opportunities that aim to:
• develop STEM curricula designed for language learners that align to Arizona’s English
  Language Proficiency (ELP) Standards and the newly adopted Arizona College and
  Career Readiness Standards,
• provide training to improve best practices for effectively meeting linguistic and academic
  needs of language learners for TLLs, paraprofessionals and pre-service teachers, and
• provide in-class support through trained paraprofessionals and pre-service teacher
  assistants as well as resources, including STEM activities to support curriculum taught.

Requirements

Initial requirements for pre-service teachers into the teacher preparation program
component of our project included what we soon discovered to be idealistic and lacking
sufficient flexibility to ensure student retention through program completion. Pre-service
participants were required to be enrolled full-time and commit to completing 150 hours of
service-learning at elementary school sites per semester. With a community college student
population that includes a large percentage of students with limited financial resources and often
additional family and work responsibilities, the intensity of our program requirements resulted in
many of our initial program participants struggling to keep up. Recognizing that our pre-service participants should not simply complete program requirements but that they need time to process, apply, and reflect on their course learning and field experiences, we realized that building flexibility into our program requirements is essential to ensure that students complete the program successfully.

Our strategy for addressing the need for increased flexibility in program requirements was to develop a variety of options for program participation that respond to the challenges we found students were facing, as depicted in Table 1.

Table 1 Program Requirements

<table>
<thead>
<tr>
<th>Options</th>
<th>Credits</th>
<th>Service Learning</th>
<th>Meetings</th>
<th>Scholarship Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>F/T student + F/T service hours</td>
<td>12-18/sem</td>
<td>150 hrs/sem</td>
<td>1 hr/wk</td>
<td>$2400 over 2 yrs</td>
</tr>
<tr>
<td>F/T student + P/T service hours</td>
<td>12-18/sem</td>
<td>75 hrs/sem</td>
<td>1 hr/wk</td>
<td>$1200 over 2 yrs</td>
</tr>
<tr>
<td>P/T student + P/T service hours</td>
<td>6-11/sem</td>
<td>75 hrs/sem</td>
<td>1 hr/wk</td>
<td>$1800 over 3 yrs</td>
</tr>
</tbody>
</table>

The addition of these program options has allowed our pre-service participants to create a more realistic schedule based on their individual realities. Consequently, rather than feeling added pressure, a greater sense of support from our TL³C community has been generated.

Recruitment

The TL³C Project award notification was announced less than four months prior to the expected implementation of program components, with the most pressing being the pre-service teacher preparation program beginning that fall semester. The limited time for recruitment emphasized the need for tapping existing connections and resources. For future planning, the first-year rush also highlighted the need to initiate recruitment efforts early and with strategic timing. Consideration of high school calendars, college recruitment fairs, and university
admissions deadlines should be factored into the recruitment timeline. Details such as high school testing schedules (for potential high school recruits) and community college midterm/final exam weeks (for current community college recruits) must also be considered to ensure that information shared is heard and that desired action ensues (i.e. program application).

Another recruitment challenge involved the professional development component of our grant, where we found ourselves struggling to fill our summer institute with TLLs from our official partner schools. This challenge alerted us to the importance of building relationships with program participants as well as encouraging higher levels of participation that not only further professional development but also validate the wealth of knowledge and expertise of TLLs. As we have developed and nurtured our relationships with TLLs at partner schools, we have seen an increase in their engagement as both participants and presenters/facilitators at our sponsored professional development opportunities. Furthermore, additional requests for higher levels of participation are coming from schools other than our official partner schools. Our strategy for addressing these requests has been to create Level 1 and Level 2 partnership sites, as indicated in the table below.

### Table 2 Partnership Levels

<table>
<thead>
<tr>
<th>Level 1 Partner Sites</th>
<th>Written into the grant and have top priority for grant items that are associated with funding</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level 2 Partner Sites</td>
<td>Through high-level participation in TL(^3)C sponsored events and communication have second priority for grant items that are associated with funding</td>
</tr>
<tr>
<td>TL(^3)C Consortium</td>
<td>All stakeholders invested in programs for language learners to be included in dissemination of information, communication and TL(^3)C sponsored events.</td>
</tr>
</tbody>
</table>

### Retention

As discussed in our Requirements section, our community college student population includes a large percentage of students who have limited financial resources, work part- or full-time, and/or have significant family responsibilities. MCC student demographics for 2014 show
the average age to be 26, forty-seven percent of students are from minority backgrounds, 68% are part-time students, and 47% are first-generation college students (MCCCD Institutional Research Information System, October 2014). The same strategy used to address our initial recruitment challenges also have also addressed the retention challenges posed by the nature of our student body. The increased flexibility in program requirements now provided through a variety of options for program participation reflects a more holistic and comprehensive response to student needs.

Going into year 3 of a 5-year grant and due to the part-time status of many of our pre-service participants, we are expecting to see a significant increase in our community college program completion rate. These pre-service teachers, as a limited number have done thus far, will then move into their next stage of program completion within our university partners’ BLE/ESL teacher certification program. Hence the retention through completion challenge is two-fold:

1. at the community college TL³C teacher preparation program
2. at the transfer university BLE/ESL teacher certification program.

While in the midst of this challenge, we have reaped the benefits of the complex program design that resulted in an inherent strategy for addressing the challenge. The opportunity presented through this two-fold challenge is in terms of through institutional collaboration and program mentorship as students move from the community college to the university. The various components of our project provide rich opportunities for ongoing interactions between college/university faculty, pre-service teachers, practicing TLLs, and school/district administrators. These opportunities have fostered the intentional creation of a broad network of support, which we refer to as our TL³C Consortium.
Results

In 1993, the Federal government enacted the Government Performance and Results Goals “to improve program management throughout the Federal government” (U.S. Department of Labor, 2014). The results that we report to the U.S. Department of Education in our biannual required reports have to address the GPRA goals. TL$^3$C has committed to the five GPRA Goals, with sub-goals that address specific components within each goal, identified in Table 3.

Table 3 TL$^3$C’s GPRA Goals

<table>
<thead>
<tr>
<th>Goal Number</th>
<th>Goal Narrative</th>
<th>Number of Sub-Goals</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>To increase the pool of highly prepared teachers of language learners (TLLs) by establishing cohort groups or pre-service teacher</td>
<td>8</td>
</tr>
<tr>
<td>2</td>
<td>To train and support in-service teacher TLLs in effective teaching strategies and best practices for culturally and linguistically diverse learners</td>
<td>7</td>
</tr>
<tr>
<td>3</td>
<td>To train and support paraprofessionals in effective teaching strategies and best practices for culturally and linguistically diverse learners</td>
<td>2</td>
</tr>
<tr>
<td>4</td>
<td>To train and support higher education faculty (in various disciplines) who instruct pre-service teachers in effective teaching strategies and best practices for culturally and linguistically diverse learners</td>
<td>3</td>
</tr>
<tr>
<td>5</td>
<td>To build capacity for TLLs by developing curriculum that incorporates STEMSS, ELP, and AZ College and Career Readiness Standards</td>
<td>3</td>
</tr>
</tbody>
</table>

TL$^3$C is a multifaceted grant that includes a range of participants including pre-service and in-service teachers as well paraprofessionals and faculty at MCC. The participants in our grant activities vary from semester to semester and often, sponsored event to sponsored event. For example, we provide various professional development opportunities throughout the year and who attends depends on pre-service and in-service teacher availability.
Because of the multiple components of our grant, collecting data that demonstrates how we have met each of the GPRA Goals has been challenging. Our instruments have evolved as we continue to refine them and adjust to best measure both the GPRA goals as well as other goals that the core team - composed of the Project Administrator, Project Director, Project Expert, and External Evaluator - has identified. Furthermore, all of the GPRA sub-goals are written such that they can be measured quantitatively. For example, sub-goal 2.3 states that “Annually, in-service TLLs participating in TL³C paraprofessional development will demonstrated a 20% increase or score 80% or better in their knowledge of STEMSS through a pre-post survey.” In additional to the quantitative measures, we are also collecting qualitative data to deepen our understand of TL³C’s impact. For example, a project goal not overlapping with a GPRA goal is understanding how pre-service teachers form their identities as teachers. Although this is not a GPRA Goal, it is a project goal that we are addressing through using focus group and interview data.

Because of our various foci, it has become critical as we have proceeded year to year with the grant to create and implement a systematic and coordinated plan to collect, analyze, report, and disseminate data from the grant. This has required a common vision for and understanding of the grant and it’s goals. It has also been important to develop a common vocabulary. For example, when addressing any professional development focusing on academic vocabulary development, we had lengthy discussions within our core team as well as with teachers in our partner sites about developing a common set of terms that would be used within professional development activities, STEM clubs, and lesson creation. The decision was made to use the terms to distinguish among various vocabulary levels - Tier 1, Tier 2, and Tier 3 - developed by Beck, McKeown, and Kucan, (2002).
Reality

It is essential that we acknowledge the political climate in Arizona in regard to issues impacting English learners. A number of policies stemming from legislature passed in Arizona between 2000 and 2014 have impacted the preparation of teachers of English learners and their students. More specifically, Jimenez-Silva, Gomez, and Cisneros (2014) reported that recent in response to the legislature, Arizona educational policies have been enacted that do the following: (a) severely limit bilingual education, (b) develop controversial funding solutions, (c) implement a segregated 4-hr English language development block, (d) mandate structured English immersion–focused teacher preparation, and (e) develop disputed identification and classification instruments. TL^3C is required to work within the policies that impact ELLs. All preparation of pre-service teachers and professional development activities for in-service teachers has to address the reality that Arizona is an English-only state for ELLs and that although dual language immersion programs are growing, they are often serving native English speakers learning a second language (Gomez & Jimenez-Silva, 2014).

As discussed in a section above which addressed the Arizona context, we stated that all teachers in Arizona are required to take two Structured English Immersion (SEI) courses that then provides them with an SEI endorsement from the Arizona Department of Education (ADE). One of the realities that TL^3C has had to address is the misunderstandings that exist in our educational community regarding the differences among an SEI, an English as a Second Language, and a Bilingual (BLE) endorsement. It has been a challenge to help pre-service teachers to see the value of an ESL or BLE endorsement that requires additional coursework and preparation.

An additional challenge for pre-service teachers served by TL^3C who are seeking to
become bilingual teachers is a lack of support for attaining Spanish fluency to a level that would allow them to pass the Spanish proficiency requirement that is mandated by ADE. Currently, pre-service teachers complete two courses in the same foreign language and although a significant number of our students are native Spanish speakers, they have not developed their Spanish proficiency enough to successfully become BLE endorsed teachers. TL³C has attempted to address this issue by providing a summer study abroad program in Guanajuato, Mexico to provide more exposure to Spanish in schools in Mexico. However, the program has not been as successful as we had hoped due to the time and financial commitments required of pre-service and in-service teachers. In addition, the Arizona political climate has not been supportive of travel to Mexico.

The current teacher preparation programs in Arizona do not provide any options for pre-service teachers who seek to become Early Childhood teachers with BLE/ESL endorsements. Therefore, another reality faced by TL³C is the inability to recruit pre-service teachers who would like to work with the youngest of our ELLs. Currently, TL³C is involved in collaborative conversations with universities about articulating such programs.

The final reality faced by TL³C is the need to constantly monitor and adjust all aspects of our program. The key has been to not remain static in any regard but instead, to adopt a mindset of being fluid and flexible. Whether the issue has been adjusting the requirement of service learning or redesigning the curriculum STEM clubs offered through TL³C, significant time and energy needs to be devoted to realignment between our goals and the services we offer.

**ACCESS**

Academic Content Combined with English in Secondary Schools (ACCESS), a five year, NPD grant-funded program from 2008-2013, provided secondary mainstream teachers of
English learners (ELs) a cohort based professional development program to support teachers’ development of knowledge, disposition and skills important for teaching English learners. As a university-school district program, ACCESS provided mainstream teachers with 18 graduate credit hours of professional development experience and coursework needed for obtaining the state’s English as a Second Language endorsement. Over the five years of the program, nearly 100 teachers from 12 urban schools completed extensive professional development in English as a second language coursework.

ACCESS’s professional development model included preparation for developing cultural and linguistic awareness, instructional knowledge and affirming dispositions (Lucas, Villegas & Freedson-Gonzales, 2008; Villegas & Lucas, 2002) as a means of effectively instructing ELs (Tellez-Waxman, 2006; Walqui, 2008).

The research of Cochran-Smith & Lytle, 1999; Echevarria, Vogt, & Short, 2009; Garet, Porter, Desimone, Birman & Yoon, 2001; Faltis & Coulter, 2008 informed ACCESS’s curricular and programmatic aspects for developing secondary mainstream teacher’s knowledge and skills.

The ACCESS program evaluation utilized qualitative and quantitative data including pre and post surveys, an in-depth post participation survey with emphasis on knowledge, skills and practice, interviews of teachers and administrators, and teacher observations using a SIOP protocol (Echevarria, Vogt & Short, 2009). The data, triangulated from a number of sources, indicate that teachers developed 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 results are significant for both teacher professional development and university partnership programs focused on teacher development and for districts seeking to ameliorate instruction for ELLs in order to improve academic success.
Requirements

Participants of the ACCESS program were high school teachers from all content areas who taught at schools in a large urban district located in a metropolitan city in the Southwestern U.S. Participation only required that participants be teaching high school within the partnering district and that they complete an application process. All teachers in the district were eligible for participation. Upon application to the program, teachers were required to attend an orientation meeting in which they received information and directives for applying to the university as a non-degree student. Since the orientation was mandatory for participation in the program, it was often the case that additional orientation meetings had to be scheduled to accommodate teachers’ busy schedules.

Recruitment

One of the largest challenges of the program was recruiting teachers to participate in the program. Recruitment was mainly done through school visits, site-based meetings with teachers and administrators, and through referrals from participants already enrolled in or who had completed the program previously. Even though the grant provided many advantages for teachers: the cost of tuition to the university was covered, teachers completing the program were eligible to receive an ESL endorsement through the state, and the credits earned from coursework could be used towards a Master’s Degree at the participating university, still for some teachers, their heavy workloads often made participation prohibitive.

Retention

Retention was a continual challenge throughout the program which covered three semesters of coursework. Retaining teachers for the full length of the program was difficult. Approximately 20% of the participants began the program in one cohort and ended up
completing the program in a subsequent cohort. Flexibility was important for ensuring that teachers could complete all three semesters.

Each cohort began with twenty-four to twenty-eight teachers applying for participation. Of these, sixteen to seventeen teachers remained through to the end to complete their coursework. Over the five years of the ACCESS program, 99 teachers completed some portion of the ACCESS program with an 83% retention rate for completion of the entire eighteen credits.

To address the retention concern, ACCESS administrators arranged for special class times for courses held on the university campus in order to better accommodate teachers’ schedules. Some courses also met on site at schools within the district. Often there was a need to be flexible and make accommodations for students who were not able to complete the program or attend all classes. As a means of retaining students, the director would often contact individual teachers who were missing work or in danger of not completing a course in order to work out a plan for retention and completion.

Results

Over the course of the five year program nearly 100 high school teachers from many content area backgrounds successfully completed six foundational courses in English language education including coursework in: language minority education, bilingualism and second language acquisition, literacy in secondary BLE/ESL settings, parental and community involvement, assessment, and strategies for sheltered instruction. Data from pre and post surveys, teacher interviews and classroom observations show that ACCESS teachers grew in their understanding and knowledge of language development and the role of L1 use in the classroom to support English development. Teachers also moved toward greater sensitivity and value for bilingualism and for making positive connections to students’ homes, communities and cultures. In
classrooms, teachers incorporated more teaching strategies to support their students learning, and in particular, ACCESS teachers expressed a stronger sense of advocacy for their English learners after participating in the program.

**Reality**

In order to impact teachers, a professional development program must have teachers who are invested and open to learning and growing as professionals. Recruiting these teachers requires a great deal of time and effort. Getting buy-in from district and school administration is an important element in this process. When district administration, school principals and Assistant Principals were behind the recruiting efforts of ACCESS, it was much easier to recruit teachers for the program. Administrative support helped teachers be more invested and willing to devote the time and work necessary to continue in the program.

Once teachers were enrolled in the program, retention became the real challenge. A professional development program for in-service teachers must take into account the heavy workloads and priorities that teachers are tied to in their day to day work with students. For ACCESS to be successful and accomplish its goals, flexibility and individual support were necessities. It was imperative that coursework and assignments were relevant and responsive to teachers’ classroom contexts and the realities of teaching. Even then, many teachers needed more individualized options and support in order to be able to complete the program and be successful.

**TELAC**

Teaching English Learners Academic Content (TELAC) is a professional development program modeled after the previously established ACCESS program with modifications based on grant requirements and feedback from ACCESS participants. As a STEM initiative, this new
OELA/NPD sponsored project was developed specifically for middle and high school teachers of math, science, technology and English/Language Arts from several urban school districts located in a large metropolitan city in the Southwest. The goal of the project is to support middle and secondary STEM teachers to improve the academic achievement of English Learners (ELs). TELAC participants take two semesters of university coursework and a two-semester practicum that engages them on-going critical reflection and refinement of their practice through individual and group- learning activities tied to their school/classroom contexts. They also receive individual coaching and mentoring that supports their examination and refinement of instructional practices in support of ELL students.

Underlying the TELAC professional development model is the work of Dall’Alba and Sandberg (2006) in which they reframe PD as an “embodied understanding of practice” with a need to see professional development as developing understanding of, and in, professional practice rather than an accumulation of skills. TELAC utilizes this approach by tying program curricula and assignments to teachers’ classroom experiences and instruction and by providing classroom-based coaching/mentoring support for every teacher.

Research on TELAC utilizes a mixed-methods, qualitative and quantitative approach with data collected through participant surveys, interviews, artifacts, journals, and classroom observations. The research shows that teachers in the program developed and refined their teaching practices with more of a focus on language development through increased opportunities for listening and speaking, more group collaboration, an increase in reading and writing activities, integrating language objectives into lesson planning, more explicit teaching of vocabulary and language elements, and a greater focus on academic language teaching and learning. Teachers also reveal a greater sensitivity and awareness of the importance of culture in
learning with teachers actively getting to know their students’ backgrounds and looking for ways to use what they learn to build connections between students and the content being taught.

**Requirements**

Requirements for participating in TELAC are minimal. As a STEM based initiative, all participants have to be either current STEM teachers or English Language Arts teachers, as a result of the program’s connection to a university English Department. All of the teachers in the program are currently teaching at the middle or high school level in one of the partner school districts associated with the project. These schools represent areas of highest need and include schools with the large populations of English learners in this large metropolitan city. After applying for participation, teachers were required to attend an orientation where they received information about the program as well as support to apply for admission to the university. For some teachers, this process was a challenge in itself as it had been many years since they had attended classes at a university and the paperwork and requirements were an issue. A few teachers who were interested in the program ended up dropping or postponing participation due to the issues they encountered during this process. It was important at this stage to follow up with teachers to ensure that they were properly admitted and enrolled in order to begin the program as scheduled.

**Recruitment**

The program’s goal of enrolling twenty-five teachers per year has been difficult to meet, and as a result, recruitment has become one of the greatest challenges faced by program administration and staff. Even though twenty-six to thirty-six teachers apply to the program each year, only seventeen to nineteen end up actually enrolling in the program. Many of the teachers
who have applied but not completed the enrollment process cite changing or unexpected workloads at school, health issues, or personal/family concerns as reasons for not continuing.

Efforts to recruit participants include scheduling regular school site meetings with administration and teachers, following up on referrals from prior participants, and meetings with district EL coordinators and administration. We have also worked to align the program’s coursework with university graduate programs making it possible for teachers who complete the program to roll over their credits into established university Master’s programs. We have found this to be a strong motivation for some teachers in making the decision to participate in the TELAC program.

Retention

In addition to recruitment, retention has also been a great challenge for the program. Teachers’ workloads, changes to teaching schedules, and illness have made it impossible for some of the teachers to continue once they have begun the program. Implementing hybrid classes to reduce face-to-face class time has helped, but is not sufficient for making the load manageable. Some teachers report that the course workload and assignments have been too much for them to manage on top of their teaching loads at school. In response, we have worked to extend deadlines, modify coursework, combine assignments, and scale back on outside of class work by providing more in-class time for teachers to complete assignments. As a result, teachers have expressed that providing in-class time to complete coursework has been very helpful and appreciated.

Retention efforts have increased over the first few years of the program as we developed new ways of ensuring teacher completion and success. TELAC staff now make personal contact biweekly with participants to learn how they are doing and address any concerns or issues as
they arise. Coursework has been streamlined and consolidated and assignments modified to make them more manageable. In addition, we now begin coaching teachers earlier in the program as a way of offering support early on. By way of partnering with and garnering district support, we have also planned and implemented ELL and SIOP workshops for district administration to address their needs and concerns in supporting their teachers in working with English learners.

**Results**

Currently in our third year, forty-two teachers have completed or are now enrolled in a TELAC cohort. Teacher reported data show deeper understanding and awareness of EL students’ language and learning needs in the classroom. Based on the pre and post survey data teachers are moving towards more culturally and linguistically responsive teaching practices as a result of their work and experiences in the TELAC program. All teachers report making changes to their teaching practices that reflect greater awareness of their English learners and a greater sense of how to address students’ language and learning needs in the classroom.

**Reality**

Teachers today find it very difficult to work under federal, state, and local mandates, fulfill school expectations and directives and still meet the diverse learning needs of every student that enters their classroom. As a professional development program aimed at supporting the growth and development of teachers of English learners, we’ve found that teachers want to learn and become more effective teachers of their ELs, but to help them, we must meet them where they are at. We have to work with them to design and develop a professional development program that is relevant and responsive to their teaching contexts and professional learning needs through incorporating flexibility, trust, and caring.
The goal of Project LEAP (Language, Equity and Academic Performance), is to provide Alaska’s in-service teachers with the knowledge and expertise they need to facilitate ELL’s acquisition of language, literacy, and content knowledge, especially in the areas of literacy, mathematics, science, technology and engineering. In order to more effectively meet the needs of the ELLs in Alaska classrooms, we must improve the instruction they are receiving.

To accomplish this, we have developed and begun implementing a P-6 ESL Endorsement program that consists of 18 credit hours of graduate level coursework. Throughout the coursework, in-service teacher participants are involved in a variety of activities and study that impact their classroom instruction and cause them to reflect on their teaching practices. They are exposed to the current issues, policies, and laws that are guiding ELL instruction and practices, as well as receiving professional development centered around the State’s newly adopted English Language Proficiency Standards from the WIDA Consortium. Action research, case studies, student assessment data, and student work samples are utilized by teachers to assess their ELL’s language proficiency and used to guide their instruction to improve student performance. Teachers identify instructional strategies, curriculum materials, and content to enhance their instruction in the areas of STEAM to improve the way their ELLs are learning science, mathematics, technology and engineering in preparation for future careers.

Requirements

It was a common complaint that first semester: the workload was too much, the focus too “theoretical.” Our Project LEAP participants were not used to graduate-level work in which they were challenged and expected to become a part of the wider community of educators who are guided by research-based practice. Local school districts had in recent years offered many “500-
level” graduate classes, which had few requirements and little connection to research. In Project LEAP, our participants were expected to enroll in six graduate credits per semester while working full-time in schools. Our courses were rigorous. Too rigorous, we learned, as we lost nearly twenty percent of the enrolled students in Cohort 1 before the second semester started. Though most of the attrition happened before the add/drop period first semester, we simply had to consider what we could do to lower the workload and expectations without losing any of the academic vitality we hoped to foster.

Our strategy was multilayered: lessen the workload, make more of the content directly applicable, and continue to make connections between research and practice. We dropped a few assignments, added more hands-on activities, and continually assured our subsequent cohorts that the focus on research and theoretical foundations in the first semester was purposeful, and would pay-off when the focus turned to implications of the research for revised classroom practice (particularly via the action research project).

**Recruitment**

Recruitment was awkward in the beginning of Project LEAP, particularly because we didn’t allow ourselves a planning year. Our sense of urgency was guided by the need to build the capacity of the teachers to become effective and successful practitioners able to meet the academic and linguistic needs of an increasingly diverse population of students. Because of this decision we were building the plane while we flew it. Many of the questions that came up about the program were answered on the fly. However, with the help of school district partners, we had a healthy first cohort and have continued to be able to offer two sections (one face-to-face, one distance) for each subsequent cohort thus far. Our district partners are in charge of recruitment, and they have employed a combination of face-to-face discussions, such as in meetings with
principals, and advertising through brochures, district media, and email. Recruitment has not been an issue for Project LEAP as we are currently the only ESL-certification program in the state.

One of the strategies that we have used is to make sure that participants know about the commitment expected of them in Project LEAP. When they know at the outset that there are rigorous requirements, the participants who enroll already know what the program is all about, so we have less of an issue with retention. Our College of Education seeks partnerships with different districts across rural Alaska, and so we are extending the recruitment efforts to include teachers from these rural districts. As we prepare to review the applications for cohort three of Project LEAP we continue to receive inquiries by teachers from rural Alaska who are interested in the program. This is a positive step toward addressing the high teacher attrition experienced in rural Alaska.

Retention

As noted, in the beginning we lost participants because they were not prepared for the rigor of graduate studies. Participants struggled with working full-time and studying part-time. Retention will be an issue with professional development projects simply because teachers have professional and familial obligations that make it difficult for them to engage in professional development activities. There is only so much time in the week. However, we were able to improve our retention rate by dropping superfluous assignments, being flexible with deadlines and assignments, and making clear the connection between the theory and their day-to-day classroom life. Furthermore, we decided to include more collaborative assignments where teachers from the same grade level evaluated math and science curriculum and embedded culturally sustaining STEAM pedagogy.
Results

Preliminary results show that participants deepened their understanding of culturally sustaining pedagogies and were able to analyze and modify their current practices to incorporate new and more nuanced understandings about their practices. Some of these understandings were gained from class discussions, reviews of extant literature, and from discussions about practices that took place during the critical friends group interactions. Teachers were able to formulate and refine questions about their own practice. These questions, focused on ELLs, also involved teaching in STEAM and literacy classrooms as well as parental involvement, special education and inclusive classroom cultures. In one of the title 1 schools, the number of teachers deciding to join project LEAP increased from year one (1 teacher) to year 2 (4 teachers). This indicates that teachers who completed project LEAP were instrumental in creating professional learning communities within their school.

Reality

Teachers in today’s classrooms have many, often conflicting, obligations. Project LEAP has been impacted by participants whose districts require scripted programs that leave little room for teacher professional decision-making. Participants in such settings struggled to find opportunities to enact culturally sustaining pedagogies. In addition, current economic conditions in the state have resulted in budgetary cuts, which caused a lot of anxiety among participants whose jobs were on the line, or whose placements changed without their consent. These factors contributed to the general anxiety of participants who found it difficult to care about classroom practices within a context that did not treat them as professionals.

For beginning teachers, LEAP represented an opportunity to learn about culturally sustaining pedagogy alongside experienced colleagues. The beginning teachers also made
important connections that facilitated their initial year in the classroom. Overall, teacher reported that project LEAP was beneficial to their understanding of English language learners, and to the process of language acquisition. A testament to the value of this program is the fact that many of the teachers who applied to the second cohort of project LEAP came from the same schools as the teachers from cohort one.

**Conclusion**

Although significant challenges currently exist in our efforts to meet the U.S. Department’s goal of providing professional development activities to improve instruction for ELLs and assist education personnel working with such children to meet high professional standards, we have identified a number of strategies for addressing our five common challenges related to program requirements, recruitment, retention, results, and reality. Projects sponsored by NPD grants are designed to increase the pool of highly qualified teachers prepared to serve ELLs and increase the skills of teachers already serving them. All five projects discussed in this paper seek to increase the skills of teachers in distinct communities that present unique challenges as well as unique opportunities. It has been beneficial to all involved in these various programs to share challenges, strategies for addressing those challenges, concerns, and successes. We look forward to further discussions as we continue to systematically measure, quantitatively and qualitatively, the impact of our programs. Issues related to measurement of specific program goals merit further discussion as do issues of dissemination of our findings and program replication. It is our hope that our experiences can inform the next generation of programs dedicated to supporting teachers who serve English language learners.
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Title of the submission
The World of Google – Instruction and management

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Abstract
More and more information is being stored on the cloud; employers want their employees to be able to work with others. Google offers some useful tools to meet both of these needs. This workshop will introduce the audience to 50 practical uses of Google tools; we will follow this introduction by a more detailed, advanced look at some of these Google tools and apps. The workshop will conclude with a look at an awesome use of a Google script and introduce the audience to Google Scripts which offer programmatic access to most Google services including Gmail, Google Docs, Google Drive, Analytics, Google Contacts, Calendar, Maps and Analytics.
Pertinent files, how-to files, and other outlines are available to participants at http://edulink.org/hice/
Caution: Collaborative Professionals at Work!

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CAUTION: COLLABORATIVE PROFESSIONALS AT WORK!

Abstract

General and special education teacher roles are changing as schools implement school-wide frameworks such as response to intervention (RTI). Special and general education teachers must now collaborate more as they plan and implement services for all students. Teacher candidates need to learn skills in problem-solving and handling issues faced when collaborating with other educators (Hamilton-Jones & Vail, 2013). They should have opportunities to take part in collaborative experiences through fieldwork and coursework (Conderman & Johnston-Rodriguez, 2009). General education and special education teacher preparation faculty must begin to model this collaborative planning and instruction. Our college has developed a teacher education program conceptual framework which prepares collaborative professionals who are competent in their own content and practice and can reflect and work with other educators to meet the needs of students. Our general and special education faculty model these collaborative skills as we meet to review courses and field experiences and support teaching within each of our classes. These collaborative efforts ensure that candidates are able to plan and implement instruction for all students in their classroom, despite types of diversity. In addition, candidates’ problem-solving skills, a pre-requisite for effective collaboration, are developed as they work through conflicts faced working together with candidates from other programs, with varying perspectives, training and schedules. In this presentation, we will share the ways our faculty works together to model and provide these experiences in collaboration.
Foundations of Success in Times of Change

Topic Area:
Higher Education & Other: Learning Center Management

Presentation Format:
Workshop

Presentation Description:
This interactive workshop will provide an overview of administrative topics relevant to professionals who are new to learning center management, including writing centers and subject area tutoring centers. The topics are relevant to professionals working in K-12 settings as well as postsecondary settings. The first half will focus on the administrative aspects of operating and maintaining a learning center. The second half will focus on methods for understanding and reporting data.

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Foundations of Success in Times of Change

Presentation goal

The ability to properly lead a team is critical to the success of any organization. This presentation offers a solution to the issue of new learning center directors often having to gain knowledge about all aspects of a center on-the-job rather than ahead of time. By making information about learning center management—in all of its aspects—available at once to a group of new professionals, the workshop presenter hopes to help conference attendees think through the learning center cycle from start to finish. To be relevant to conference attendees, the workshop will help participants network with each other, learn about centers’ day-to-day operations, consider relevant literature and opportunities for research, find ways to extend learning/development opportunities to center tutors, and find ways to communicate the role that learning centers may play in an institution’s overall retention of students.

Session summary

Summary: This interactive workshop is focused on supporting new learning center professionals (Christ, 2001) in developing a toolbox of strategies, theories, language, and timelines that will aid them in operating a learning center from top to bottom—from A to Z.

The first half of the workshop will focus on the administrative aspects of operating a learning center (Boylan, Bliss, & Bonham, 1997; Ender & Newton, 2000). As a way to provide participants with a theoretical framework for learning center management, the presenter will also provide participants with an overview of the current literature in learning centers (Boud, Cohen, & Sampson, 2001; Ender & Newton, 2000; Topping & Ehly, 1998) and student development theories (Astin, 1993; Chickering, 1969; Chickering & Reisser, 1993; Evans, Forney, Guido-DeBrito, 1998; Thomas & Hixenbaugh, 2006). Participants will receive an outline detailing the yearly cycle of a learning center. Additionally, through discussion, participants will have an opportunity to work in a collaborative environment to learn what other practitioners in their field have in place in the following areas: hiring processes, expectations, training, marketing, ongoing professional development, program evaluation, and retention of student staff.

The second half of the workshop will focus on methods for understanding and reporting center data. In this current environment of evidence-based practice, it is important to highlight the impact learning centers have on the students who utilize their services (Gordon, Morgan, O’Malley, & Ponticell, 2007; Hill & Topping, 1995; Tinto, 1987; 2006) and to use the information to communicate with stakeholders. Using hands-on activities, participants will have an opportunity to take raw data and use Microsoft Office 2010 Excel to organize and analyze the data. Participants will also learn how to create charts in Excel and use pivot tables to interpret and report their findings. For this portion, participants are encouraged to bring their own laptops to fully engage with the material presented.

Learning Objectives: This presentation has the following learning objectives for participants who attend this workshop:
(1) become familiar with the literature on learning center and student development theories, (2) understand the cycle of operating a learning center, and (3) use Microsoft Office Excel to create charts and pivot tables in order to understand and report user data.

Presentation Bibliography

Preparing the New Professional: Learning Center Management from A to Z


Title: Social Competence of Youth with Autism Spectrum Disorders: Exploration of a Peer Facilitated, Equine-Assisted Growth and Learning Program

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Abstract: Autism Spectrum Disorder profoundly affects 1 in 88 children, and their families and is characterized by atypical language, social competence, and motoric behavior (Centers for Disease Control, 2012). Social competence is a critical skill for success and consequently effective interventions are needed. This study was designed to examine the effects of a peer facilitated equine-assisted program on the social competence of youth with Autism Spectrum Disorder. The effectiveness of equine-assisted interventions for children with disabilities has been well-established (Bass, Duchowny, & Llabra, 2009; Pavlides, 2008) and equine interventions have been shown to improve social competence (Pendry & Roeter, 2013; Pendry, et al., 2013). Our study examined the use of non-disabled peers facilitating social competence in youth with Autism through an equine-assisted program. The effectiveness of using peers to improve social competence is well documented (Dunlop, et al., 2007). It was hypothesized that peer engagement during the equine-assisted program would positively impact the social competence of youth with Autism. A bounded case study design was used with three youth with Autism Spectrum Disorder and three non-disabled peers. The youth participated in a 10 week equine-assisted growth and learning program that involved a team approach to groundwork with horses and communication/leadership activities. Data collected included pre/post program social responsiveness scores, observed social and behavioral indicators, and pre/post program parent interviews. Results indicate that all three of the youth improved their social competence.

References


Title: Teaching with Interactive Technology in Early Childhood Special Education

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Abstract: Teaching with interactive technology is a promising but under-utilized instructional method that can help teachers support children with more intensive learning needs at varying development levels in preschool classrooms. This formative study was focused on examining the engagement of three young children with disabilities during group instruction when using technology compare to traditional materials. A single subject multiple baseline withdrawal method was used to determine if adding an interactive touch screen to group instruction time increased the engagement of children who were functionally non-verbal. Results showed variability across phases, but children increased their engagement during the technology intervention overall.
Avoiding Disgusting Discussion Board Questions
Dr. Vanessa Evans Huse-TAMUC
Dr. Rhonda Harris Taylor-Retired OU
Dr. Maribeth McAnally-TVCC

The Principles and Standards for School Mathematics of 2000 (National Council of Teachers of Mathematics) and the mathematics component of the Common Core State Standards of 2010 (Common Core State Standards Initiative) emphasize the importance of developing problem solving skills in mathematics. As summarized by the Principles and Standards, “This set of Standards reinforces the dual goals that mathematics learning is both about making sense of mathematical ideas and about acquiring skills and insights to solve problems” (National Council, “Standards for Grades 3-5”). Promoting such duality of skill development is particularly challenging in the contemporary, online mathematics class at the university level. And yet, the need is especially critical when teaching higher education students who will ultimately be responsible for instructing children. However, one strategy that facilitates problem solving is effective discussion questions, which can:

- Encourage critical or creative thinking
- Reinforcing [sic] domain or procedural processes
- Achieve social interaction and community building
- Validating [student] experiences [inside and outside the classroom]
- Supporting [sic] students in their own reflections and inquiries (Boettcher)

The link between effective questioning and problem solving skill development has long been understood in mathematics pedagogy. Historically, mathematics textbooks from the early part of the twentieth century required more higher-order problem solving than is evident in most
contemporary textbooks. For instance, a 1913 textbook entitled *Rural Arithmetic* contained problems that were "real and practical," and that presented students with “a chance to solve problems in which they and their parents are vitally interested" (Calfee iii). Consider this sampling of problems from that early 20th century text intended for students in elementary grades:

How long must a skirt be cut to measure 39 in. when finished, if it has two clusters of tucks each composed of five 1/4-inch tucks, and is lengthened by a 6-inch flounce? (Allow 3/4 in. for adding the flounce.) (54)

Which is the better proposition, to keep a young calf for 120 days, feeding it on an average 2 1/2 gal. of fresh milk per day, at 12¢ per gal., and then sell it for $18; or sell it at birth for $2 and make and sell butter at 20¢ per pound from the milk, which contains 4% butter fat, the skim milk and buttermilk paying for the trouble of milking and churning? (82)

In contrast to these historical examples which married real-life experiences with mathematics knowledge, too many current “traditional online discussion forum questions are ineffective to inspire critical thinking” (Strang 80). However, the cost of business as usual is untenable. Students’ future success is dependent on developing the real-life problem solving skills emphasized in the *Principles and Standards for School Mathematics* of 2000 (National Council of Teachers of Mathematics). As articulated by Waits and Demana, “Business and industry want employees who can think, read, and understand problem situations; work cooperatively in groups; understand and use technology; and communicate effectively with others" (714). Utilization of questioning strategies is one way to integrate promotion of “social interaction and community building” (Boettcher) with content mastery. The challenge of online
teaching of geographically dispersed students is also simultaneously an opportunity for using
discussion as a learning activity among student peers. Synchronous and asynchronous class
discussion promotes learning by interacting students that is not “limited by time and space”
(Darabi, Liang, Suryavanshi, and Yurekli 229). It duplicates the increasingly common digital
arenas for interaction in the workplace.

One strategy for fostering more robust discussion is to have students create the problems.
Silver, Kilpatrick, and Schlesinger (1995) emphasize that students need practice in formulating
mathematical problems for themselves. If they are always presented with well-formulated
problems that contain just the information needed for a solution, how can they learn to deal with
situations in which appropriate mathematical ideas and techniques are not obvious--that is,
situations in real life?” (14)

The *Principles and Standards* specifically address problem solving, and require that:
Instructional programs from prekindergarten through grade 12 should enable all students to—

- build new mathematical knowledge through problem solving;
- solve problems that arise in mathematics and in other contexts;
- apply and adapt a variety of appropriate strategies to solve problems;
- monitor and reflect on the process of mathematical problem solving.

Other approaches that are suggested for helping students develop problem solving skills
include asking students to restate ill-formulated or partially formulated problems, modifying
textbook problems so they are open-ended, and having students change existing problems
(Silver, Kilpatrick, and Schlesinger 14-15). But, how well-prepared are teachers of university
mathematics classes to implement the standards on problem solving in their own pedagogy? In
what practical ways are university teachers providing opportunities for their students to practice
critical thinking or “to engage in these more open-ended forms of mathematical thinking” (Silver, Kilpatrick, and Schlesinger 31)? And then, given their own course experiences, how well-prepared are those university students, as future mathematics teachers, to develop critical thinking skills in their own students?

A 2012-2014 teacher training institute, funded through a Teacher Quality Grant provided three semesters of professional development for twenty elementary and middle-school mathematics teachers. The goal of the Institute was to focus these teachers on developing algebraic thinking. Emphasis was placed on the development of higher-level questions for students, in the context of a variety of problem situations using algebraic concepts. Work in problem solving was built around Bloom's Taxonomy, with which all of the teachers were already familiar. Instruction in problem solving was predicated on several assumptions. First, it was emphasized to Institute participants that everyday life provides multiple problems well-suited for revision by the teachers. The following example was provided:

In this chart, a rental agency has outlined the cost of renting a compact car.

<table>
<thead>
<tr>
<th>Miles in One Day</th>
<th>Cost to Rent</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>23</td>
</tr>
<tr>
<td>100</td>
<td>43</td>
</tr>
<tr>
<td>200</td>
<td>63</td>
</tr>
<tr>
<td>300</td>
<td>83</td>
</tr>
<tr>
<td>400</td>
<td>103</td>
</tr>
<tr>
<td>500</td>
<td>123</td>
</tr>
</tbody>
</table>

This mathematical situation has no questions, providing only information. But even a layperson who reads it would begin to calculate costs. For instance, what would it cost to drive three hundred miles? This type of answer can be easily derived by reading from the chart provided. At a more sophisticated thinking level, a student might be asked to determine the cost
for driving ninety-nine miles by interpreting the data in the table. Obviously the second question requires more thought. An even more complex question could be posed to students: If you have fifty dollars to spend, how far could you afford to travel in one day?

Second, it was determined from the needs assessment survey that while the participants had been trained in their pre-service education courses to develop questions, many did not have experience in practicing this skill in a mathematical context. Their tendency was to rely on textbooks for problem solving experiences that they presented to their students. Obviously, this strategy is not adequate for preparing students to enter the twenty-first century workplace.

Therefore, the instruction for Institute participants began with a return to their common base of knowledge about educational theory, as manifested in Bloom's Taxonomy. When asked to develop questions on all levels of the taxonomy, the teachers tended to write good questions, but at only the lower levels (knowledge, understanding, and application). They exhibited an inability to easily produce higher level questions at the analysis, synthesis, and evaluation levels.

Returning to the example of the rental car, following are sample questions developed by the Institute participants and categorized by Bloom's Taxonomy:

**Knowledge**
1) What does it cost to rent a car to travel 500 miles?
2) For every 100 miles driven, the cost increased by how many dollars?

**Understanding**
1) What happens to the cost as the miles decrease?
2) Does the cost per mile increase or decrease with more miles traveled?

**Application**
1) What is the difference between the costs of traveling 500 miles in one day compared to the cost of traveling 200 miles in one day?
2) If you drive 300 miles one day, and 500 miles the next day, what is the total cost for the trip?
Analysis
1) Graph the data given, determining the proper scales to be used.
2) Find the algebraic formula to represent the data shown in the table.

Synthesis
1) If you needed a more expensive car, what would be the cost for 500 miles, if 0 miles cost $40 and 100 miles cost $75?
2) Based on the pattern represented in the chart, what would be the cost for driving 600 miles?

Evaluation
1) If you had $200 for a vacation, how many days could you travel? How many miles could you travel each day? Explain the logic for your decision.
2) The cost to insure each rental car is being increased by 20%. Revise the chart given to cover your new expense. Explain your method for the mathematical increase.

Experiences with this sample of in-service teachers in our program reiterate the need for teacher education programs to provide teachers the opportunity to develop online discussion questioning strategies using the principles of Bloom's Taxonomy, both for the educational experience of the teachers and as models for their own classroom while providing instruction to students. Teachers must be confident in their own abilities to solve problems and to create problems to be solved before they can facilitate their students' experiences in critical thinking and problem solving in mathematics.

“Online learning has been the subject of criticism for lacking what some scholars have considered fundamental elements such as social dialogue and interaction” (Darabi, Liang, Suryavanshi, and Yurekli 228). However, use of effective online discussion strategies counters that assumption. Effective design of discussion requires faculty attention to “structure, elements of interaction, a certain level of complexity, task orientation, clear expectations, and personal instructor involvement of the instructor in the course and her/his personal interactions with students” (Darabi, Liang, Suryavanshi, and Yurekli 229). Proper design of online discussion
questions will inherently promote the dialog and interaction needed for student synergy in problem-solving.

In designing online discussion, it is useful for faculty to remember the reasons for taking time to develop it. These include “to promote problem solving,” “to make connections among ideas and applications,” and to encourage reflection” (PBS). In designing discussions, a review of Bloom’s Taxonomy, especially the revised taxonomy (Anderson and Krathwohl) is useful, and there is an online resource that provides quick-use, how-to guides for utilizing Web 2.0 technologies with Bloom’s taxonomy, including suggested activities and keywords (Churches). PBS Teacherline offers via the Web a two-page list of questions for teachers to use in developing students’ mathematical thinking (“PBS Teacherline”).

It is also important to employ feedback strategies for student discussions that will forward the agenda of mastering mathematics content, promoting student confidence, and extending the new knowledge acquisition beyond the classroom. There are readily available resources to assist in development of evaluation for the student discussions, and they are also useful in the initial task of checking what needs to be included in the assignment (discussion) development. Online rubrics for such evaluation are available at http://www.uis.edu/colrs/learning/pedagogy/rubrics/.
Works Cited


Note

1The activity described in this article was part of a funded teacher training institute, produced under a grant from the Texas Higher Education Coordinating Board (THECB) and the United States Department of Education (DoED).
Translating a Short Cycle Formative Assessment Observation Protocol

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Abstract

When conducting research that involves international collaborators, there is sometimes a necessity to have research instruments translated that retain validity and reliability. The international research team focused on the transformation of algebraic reasoning in middle school classrooms determined that an observation protocol validated in math and science classrooms was a necessary instrument for the research project. The paper includes a description of the constructs of AssessToday, process for translating the handbook, discussion of the visual model for the process, difficulties in translating from one language to another and future work to be done for validating the use of the Thai version of the observation protocol.

Introduction

U.S. and Thailand Mathematics Education faculty have a research collaboration regarding middle school mathematics teachers teaching of algebraic reasoning. Foci of this collaboration include research on short-cycle formative assessment, Lesson Study and mathematical knowledge for teaching (MKT). Although there is research on the effect of teaching for each of these individually, there is currently no research published on the integration of the three together. The overarching research question for the collaboration is what is the growth of middle school mathematics teachers’ knowledge and teaching of algebraic reasoning when they participate in lesson study that intentionally incorporates short-cycle formative assessment and mathematical knowledge for teaching into the process? Thus, the impact Lesson Study has in increasing teachers’ use of short-cycle formative assessment will be measured using the AssessToday: A Short-cycle Formative Assessment Observation Protocol (Eddy & Harrell, 2013).

Why Translate an Instrument?

The research collaboration includes the necessity to have instruments translated in both countries. This includes the translation of the validated observation protocol, AssessToday (Heitz, 2013). This handbook was originally written in English and needs to be translated to Thai in order for it to be part of the international research collaborative.
Theoretical Perspective

AssessToday is a formative observation protocol on teacher’s use of short-cycle formative assessment that was validated for secondary mathematics and science teachers (Heitz, 2013). The intense process of translating this instrument from English to Thai includes a team of both U.S. and Thai faculty. The paper includes a description of the constructs of AssessToday, process for translating the handbook, discussion of the visual model for the process, difficulties in translating from one language to another and future work to be done for validating the use of the Thai version of the observation protocol.

A definition of formative assessment is needed for the basis in which the observation protocol was developed. From Black and Wiliam (2009), formative assessment is defined as teachers, peers, and learners using evidence about student understanding of a concept to make decisions about what comes next rather than following a prescribed plan. The AssessToday (Eddy & Harrell, 2013) was developed with the practitioner in mind to provide both a descriptive rubric that addresses the formative assessment components during class instruction and promote conversations with teachers to increase focus on student learning. The creation of a short-cycle formative assessment observation protocol was the result of no observation instrument being available that encompassed the essential components analyzing teacher’s application for effective assessment of student learning during class instruction. Short-cycle formative assessment refers to the focus on the day-to-day learning of students in the assimilation of new information used to inform instruction.

Considering the definitions and the review of literature on formative assessment, seven constructs are included in the AssessToday. The seven constructs are: learning target, question quality, nature of questioning, self-evaluation, observation of student affect, instructional adjustments, and evidence of learning. The specific wording of the seven constructs was selected in order to meet two important goals. The first goal was to design an instrument that could be used by researchers or practitioners in any classroom situation. Since it is an observation instrument, the constructs were limited to actions observable during one period of instruction. The second goal in the design of the instrument was to use wording that was familiar to both researchers and educators. A brief description of each construct is described below.

The learning target refers to the content for which the students are to learn. Instruction needs to include a clear learning target where both the teacher and students are able to articulate and make judgments of learning. In order to determine effectiveness of the other constructs the learning target must align with the instruction.

Questioning makes up two of the constructs. Questioning quality refers to scaffolding questioning that is inclusive of prior knowledge (Popham, 2008) and the synchronizing between the levels of Bloom’s hierarchy of cognitive learning (Bloom, 1956). This includes open-ended questioning to understand student’s thinking of the content. An important aspect of questioning is the nature of questioning. This includes the wait time when questioning between the teacher and students as well as follow-up questions to diagnose the level of student understanding.

A fourth construct, self-evaluation, is the progress being made for meeting the learning target. This includes both the teacher and students to initiate students’ self-evaluation of progress toward meeting the learning target. Self-evaluation includes students having the ability to apply the strategies and skills needed to make judgments
about the progress being made and the action needed to make progress and meet the learning target (Black, Harrison, Lee, Marshall, & Wiliam, 2003).

The fifth construct, observation of student affect, is the impact the learning environment has on student learning (Cauley & McMillan, 2010). For students some observable behaviors include body language, facial expressions, and the quality of the work as they interact with the teacher and other students. The teacher’s role is to observe student behaviors and make appropriate decisions to facilitate students understanding toward the learning target.

The sixth construct, instructional adjustment, is the decision making process for determining if a student, a group of students, or the entire class needs instruction different or supplemented to what is currently occurring in the classroom (Guskey, 2007; Popham, 2008). Another aspect of this construct is the timing at which an adjustment is made to the appropriate audience in order for students to continue making progress toward the learning target.

The seventh construct, evidence of learning, refers to the information taken in that indicates that students have successfully met or making progress toward the learning target. Some of the evidence comes in the form of individual responses, all-student responses, and artifacts from student learning.

**Methodology**

The process for translating the *AssessToday* handbook from English to Thai followed the protocol as outlined in Table 1 with attention given to cultural as well as linguistic differences (Sakai, 2006). The translating team was made up of mathematics education faculty from Thailand, a doctoral student, and the authors of the handbook. The translators were native speakers of Thai and the authors were native English speakers. The first translator was a doctoral student visiting the United States as visiting scholar to contribute to the facilitation of the research collaboration. The second and third translators are mathematics education faculty and the fourth translator is an English Translator.

The first and second translators worked independently to create their own translation of the handbook (fig. 1). The first translator became familiar with the literature for the formation of the *AssessToday* by reading and attending a doctoral class on formative assessment. While developing the knowledge on the literature background, the translator read through the handbook and identified words that were unfamiliar with yellow highlights and words that were somewhat familiar with blue highlights. This was completed one construct at a time. After a construct was coded for unfamiliar and somewhat familiar words a discussion would occur with one of the authors of the handbook to clarify correct meaning and provide a more accurate translation.
Table 1

Timeline of Translating the AssessToday

<table>
<thead>
<tr>
<th>Who</th>
<th>Event</th>
<th>Timeline</th>
</tr>
</thead>
<tbody>
<tr>
<td>First Translator</td>
<td>becomes familiar with the literature of formative assessment</td>
<td>November to April</td>
</tr>
<tr>
<td>First Translator</td>
<td>reads the AssessToday and identifies unfamiliar words and translates handbook.</td>
<td>February to May</td>
</tr>
<tr>
<td>Second Translator</td>
<td>for the AssessToday translates handbook.</td>
<td>April to July</td>
</tr>
<tr>
<td>Third Translator</td>
<td>combines the two translated versions.</td>
<td>July to September</td>
</tr>
<tr>
<td>Fourth Translator</td>
<td>translates the AssessToday from Thai back to English</td>
<td>September to October</td>
</tr>
<tr>
<td>Authors of AssessToday</td>
<td>authenticate the translation</td>
<td>October to November</td>
</tr>
<tr>
<td>Third Translator</td>
<td>Revisions to the Thai Translation of the AssessToday</td>
<td>November to December</td>
</tr>
</tbody>
</table>

The third translator who combined the translations of the first two translators completed it by categorizing the translation in four steps. The first category, is to verify that structures, words and meanings are harmonious. This requires combining and polishing words for complete sentences. The second category, sentence structures are harmonious but there are word differences, which affects the meaning. Checking the different words based on English-Thai dictionary and then selecting the appropriate words according to context of the sentence made the combined translation. The third category, the sentence structure is different but using the same words, making the meaning different. This category included editing the grammar. The fourth category, the sentence structure and words are different, making the meaning different. This requires considering the translation deeply and checking the grammar and words used in the sentence before carefully deciding to write comparable Thai with the closest meaning to the English.

The fourth translator is responsible for translating the handbook from Thai back to English. The authors of the handbook compare Thai-English version to the original handbook. Once the Thai-English version is identified for any differences another revision will be made to the Thai translation. Ideally this would more accurately reflect the original English version.
Preliminary Findings

Translating the AssessToday handbook took longer than anticipated. As a result, these findings represent the work to date, which includes everything but authenticating the translation and making revisions to the Thai version of the handbook.

As discussed earlier the first translator was in the United States as a visiting scholar while conducting the work to translate the handbook. The second translator was in Thailand. This person too had to become familiar with the theoretical background and the vocabulary utilized. The second translator met on a weekly basis with the first translator to discuss their understandings of the literature and the vocabulary. However, each translator did his or her own translation. The second translator stated in her reflection of the process in regards to the weekly discussions “helped her understand and make decisions about the selection of Thai words in place of English words for those vocabulary terms in theory that have not been widely studied and there is no specific definition yet.”

Consistent with the literature in translating documents to another language (Sakai, 2006), there was difficulty in making a direct translation of the handbook. This included the grammar rules for the languages being different and words that were not part of the Thai language. The third translator had the task of making the translation of the handbook smooth and understandable.

The difficulty in translating is using the appropriate words and editing the grammar. Sometimes it is difficult to find Thai words, which have the same meaning as the English words. For example, the English word today is difficult to find the appropriate Thai word that will make sense for Thai readers. For the grammar, English
sentences using passive voice does not correspond with Thai sentence most of the time. Thai sentences are normally structured as subject + verb + object.

Conclusion

Eddy, one of the authors of the handbook in fall 2014 conducted a workshop with Thai teachers at the International Conference on Education Research by using a draft of the Thai version the AssessToday handbook. The first translator who completed her translation while in the United States translated during the workshop between the presenter and the teachers. The second and third translators were present for the workshop. This allowed them to witness the understanding of the teachers and make any necessary edits to the handbook.

Both the United States and Thailand teachers’ assessment practices still need improvement to assess student learning process and support the learning process. The translation of the AssessToday handbook assists the collaboration between the mathematics education faculty from the two countries to answer the research question: what is the growth of middle school mathematics teachers’ knowledge and teaching of algebraic reasoning when they participate in lesson study that intentionally incorporates short-cycle formative assessment and mathematical knowledge for teaching into the process?

Acknowledgements

Research reported in this paper is being supported by the Ministry of Education and the Thai Research Fund. Any conclusions or recommendations made are those of the authors and do not necessarily reflect official position of Ministry of Education and the Thai Research Fund.
References


Choosing Appropriate Measures of Mathematical Knowledge for Teaching (MKT) for Research Studies across International Boundaries

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Abstract:
Mathematics teachers are responsible for providing students opportunities to develop conceptual understandings, which requires teachers’ abilities to listen flexibly to students. The research team determined Mathematical Knowledge for Teaching (MKT) needs to be used as part of the research project in order to determine to what degree, if any, the participants have changes in their understanding not only of mathematics but also of what it means to teach mathematics. The framework of MKT that was developed by Ball and colleagues (Ball & Bass, 2003; Ball, Thames & Phelps, 2008; Hill, Rowan & Ball, 2005) created the Teacher Knowledge Assessment System (TKAS) study to address the need for large-scale evaluations of professional development focused on the improvement of teachers’ mathematical knowledge for teaching. This study utilizes the Learning Mathematics for Teaching (LMT) measures. The mathematical knowledge needed to respond to items on the LMT goes beyond only procedural knowledge and is in the context of a classroom. To be successful with the items, teachers must know why procedures work, which properties are true, which relationships are evident, and the rationale behind them (Ball, 2003).
While collaborating on research to examine teachers’ MKT, we have selected to focus on algebraic reasoning because while there has been extensive research of algebraic reasoning in the elementary grades, there has been minimal research that focuses on the “development of algebraic reasoning in the Middle Grades—the time period linking students’ arithmetic and early algebraic reasoning and their development of increasingly complex, abstract algebraic reasoning” (Knuth et al., 2011, p. 260).

The research network that is developing between the United States and Thailand for mathematics education involves researchers collaborating within and across countries. The initial project on which the network of researchers is working to measure the effectiveness of a professional development model at international and cross-cultural levels. Data collected during the implementation of the model will focus on the measurement of the impact that lesson study has in increasing teachers’ use of short-cycle formative assessment and MKT.

In order to be able to compare results internationally, MKT measures need to be valid across all research sites. Currently there are three MKT measures that focus on algebra: Learning Mathematics for Teaching (LMT), Diagnostic Science Assessments for Middle School Teachers (DTAMS), and Knowledge of Algebra for Teaching (KAT). While examining these, the research question for the project was kept at the forefront of the analysis. The KAT is more focused on algebra than algebraic reasoning, and our sample population is middle grades mathematics teachers. That eliminated KAT as a viable option. Then the researchers discussed the LMT and the DTAMS. Perhaps the most convincing argument for why the DTAMS was not selected is that for our project, we are particularly interested in teachers’ MKT, and LMT items are designed to capture mathematics knowledge as it occurs from the teacher’s standpoint during instruction, whereas the DTAMS mathematics content items (as opposed to the few PCK items that are also included) assess general mathematics knowledge that is relevant to the K-8 curriculum but not specific to the teaching of that curriculum. (Copur-Gencturk, Y., & Lubienski, 2013, p. 219)

Thus, the research team has selected to use the LMT scores, to report collective changes not individual teacher changes. Qualitative measures will also be implemented to support analyses of individual changes in concert with LMT scores.

Once the instrument was selected, the researchers had to deliberate the options for implementation of the LMT in Thailand. Should they be translated into Thai; new and different measures created in Thai; or, implement the LMT in English for Thai participants as well? While there is a benefit for data from the Thai projects being combined with the participants in the US to show a larger confidence in the data, there are enough differences between the LMT being used in the United States and in Thailand that the Thai researchers decided to translate the LMT measures into Thai and implement the LMT in Thai for Thai teachers. Some of the researchers had created MKT measures that are specific for elementary school, not for middle school and algebra. In Thailand the group will conduct the reliability and validity with three lesson study teams (one group from the North, one group from the Northeast and the other one from the South of Thailand). Each group will include teachers and internship students for improve their knowledge.
It is important to note that the *Teacher Education and Development Study in Mathematics* (TEDS-M) was translated into numerous languages, and data was collected and reported from 17 different countries, including both the United States and Thailand (Tatto et al., 2008). However, the TEDS-M was created to measure MKT of future teachers. Our current project is focused on measuring teachers already in the classroom. While the LMT was designed for classroom teachers and also validated for pre-service teachers, the TEDS-M has only been used thus far for pre-service teachers.

Sean Delaney was one of the first researchers to translate the LMT, which he directed to translate for Irish teachers. Since then, several others have translated the LMT to be used in Ghana, Norway, Indonesia and Korea (Cole, 2012; Fauskanger et al., 2012; Ng, 2012; Kwon et al, 2012). Following Delaney et al.’s (2008) method for translating, the Thai researchers will examine each of the items with respect to: “1. Changes related to the general cultural context; 2. Changes related to the school cultural context; 3. Changes related to mathematical substance; 4. Other changes” (p. 182). All of the researchers acknowledge that “translating such measures from one setting to another fairly similar setting is a non-trivial process” (p. 191), and it will require much collaboration between countries as well as significant work in Thailand.

**Information for Each Assessment System**

DTAMS: [http://louisville.edu/education/centers/crmstd/diag-math-assess-middle](http://louisville.edu/education/centers/crmstd/diag-math-assess-middle)

KAT: [http://www.educ.msu.edu/kat/](http://www.educ.msu.edu/kat/)

LMT: [http://lmt.mspnet.org/](http://lmt.mspnet.org/)

**References**


Faculty’s Experiences of Transforming Courses from Face-to-Face to Online Instruction in Teacher Education

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Abstract: Based on growth in online enrollment, many faculty members are required to develop and teach online courses they had previously taught in a traditional, face-to-face classroom. The purpose of this qualitative study was to explore the experiences of eight faculty members at one public university who journeyed through the transformative process by developing and teaching online courses previously taught face-to-face. The methodology for this study was a qualitative framework. Data were collected using a semi-structured interview guide that investigated the transformative process through three stages: planning, implementation, and reflection. Each participant was interviewed in-person for approximately one hour. Data were thematically analyzed using the transformative learning theory by categorizing the data into the 11 phases an adult learner goes through during the process. Each phase was inductively analyzed for patterns, and then the relationships that bound these patterns together were identified and labeled themes.

Introduction

According to Allen and Seaman (2013), the number of students taking at least one online course at institutions of higher education increased by over 570,000 to a new total of 6.7 million during the fall semester of 2011. Based on the growth in online enrollments, many faculty members are asked to develop and teach online courses they had previously taught in a traditional, face-to-face classroom. To successfully transition to an online environment, faculty
members must have technology skills, content knowledge, and sound pedagogy. During the transformative process, several challenges related to the planning and implementing of the online course have been cited in the literature. These challenges include, but are not limited to, having the time it takes to develop and teach an online course (Lewis & Abdul-Hamid, 2006), having the ability to use available technology tools and/or learning management systems to support student learning (De Gagne & Walters, 2009), implementing appropriate pedagogical strategies in the online course (Brinthaupt, Fisher, Raffo, & Woodward, 2011), and adapting to the role of facilitator rather than being the “sage on the stage” (Johnson, 2008). Planning, preparing, and teaching online represents more than a paradigmatic shift in the way faculty work; it is initiating new ways to think about learning. As faculty transform their face-to-face course to online, that process and experience transforms them, too. The purpose of this current study was to investigate faculty’s experiences with transforming courses from face-to-face to online delivery while situating the transformative process in the 11 phases of Jack Mezirow’s Transformative Learning Theory.

**Theoretical Framework**

Jack Mezirow defined learning as “the process of using a prior interpretation to construe a new or a revised interpretation of the meaning of one’s experience to guide future action” (Wiessner & Mezirow, 2000, p. 5). Mezirow labeled this process transformation. He began his work in 1978 when he qualitatively investigated women returning to postsecondary study or the workplace after an extended time out. Concluded from this seminal study was that these women went through a personal transformation, and Mezirow identified 10 phases they experienced (Kitchenham, 2008). Over time, Mezirow’s work on adult learning evolved into the Transformative Learning Theory with an additional phase incorporated in 1991. However, it was not until 2003 when he provided a clear definition of his theory:

Transformative learning is learning that transforms problematic frames of reference-sets of fixed assumptions and expectations (habits of mind, meaning perspectives, mindsets)-to make them more inclusive, discriminating, open, reflective, and emotionally able to change. Such frames of reference are better than others because they are more likely to generate beliefs and opinions that will prove more true to guide action. (Mezirow, 2003, pp. 58-59)

Transformative learning is the process of effecting change in a frame of reference. “Frames of reference are the structures of assumptions through which we understand our experiences. They selectively shape and delimit expectations, perceptions, cognition, and feelings (Mezirow, 1997, p. 5). As stated above, transformative learning is an 11 phase process with four main components (Mezirow, 2007): experience, critical reflection, reflective discourse, and action. To begin, the adult learner has an experience. The learner then critically reflects; examines their own beliefs, goals, assumptions etc. in relation to the experience. The learner proceeds to take part in dialogue further examining new thoughts and ideas that have come out of the critical reflection. This dialogue consists of gathering opinions of others, whether through one-on-one conversations or with a group setting. The final step is taking action based on this new level of learning and perspective.

The Transformative Learning Theory was the theoretical framework for this current
Faculty’s experiences of transforming a course from face-to-face to online were investigated using this theory’s 11 phases. In Table 1 each phase is presented and operationalized for the context of this study.

Table 1

<table>
<thead>
<tr>
<th>Phases</th>
<th>Guiding Questions</th>
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</table>
| 1. A disorienting dilemma                                             | • Why did faculty consider the transformation from face-to-face to online to be a dilemma?  
|                                                                       | • Did any new dilemmas emerge?                                                     |
| 2. A self-examination with feelings of guilt or shame                  | • What were the concerns/thoughts about faculty’s skills/abilities regarding being able to do the transformation? |
|                                                                       | • Did they think they could do it or not do it?                                    |
| 3. A critical assessment of epistemic, sociocultural, or psychic assumptions | • How did faculty compare and contrast online delivery to face-to-face?            |
|                                                                       | • What were faculty's presuppositions regarding: 1) the effectiveness of online teaching, and 2) the temporal investment? |
| 4. Recognition that one’s discontent and the process of transformation are shared and that others have negotiated a similar change | • Who did faculty talk with about the transformation process to confirm/disconfirm presuppositions and/or guilt/shame? |
| 5. Exploration of options for new roles, relationships, and actions    | • How did faculty start exploring online teaching, and where did they explore?     |
|                                                                       | • What did they learn?                                                            |
| 6. Planning a course of action                                         | • What were faculty’s conceptual frameworks for planning and designing their online courses? |
| 7. Acquisition of knowledge and skills for implementing one’s plan     | • What trainings/activities did faculty participate in to acquire knowledge and skills? |
| 8. Provisional trying of new roles                                     | • How did they transform their courses (e.g., strategies, meeting course objectives)? |
|                                                                       | • What did the teaching process look like?                                        |
| 9. Renegotiating relationships and negotiating new relationships (critical self-reflection) | • What relationships were formed through self-reflection? |
| 10. Building competence and self-confidence in new roles and relationships | • Did faculty become more confident and/or competent? If so, in what ways? If not, what was the impediment? |
|                                                                       | • Have faculty’s presuppositions about online teaching changed?                    |
| 11. A reintegration into one’s life on the basis of conditions dictated by one’s perspective | • Would faculty teach online again? Transform another course?                      |

Method
The purpose of this qualitative study was to examine the transformative process of faculty from one public university in the midwestern United States who developed and taught an online course they had previously taught in a traditional, face-to-face classroom. Eight participants, who met the criteria of having developed and taught an online course they had previously taught in a face-to-face course format within the last three years, were chosen to participate in the study. All eight participants were faculty who taught in a college of education and human development. For the majority of faculty, teaching an online course was a relatively new endeavor, taking place between one to six years previously. Of the eight faculty, three had developed and taught one online course, two had developed and taught two online courses, one had taught three online courses, and two had taught seven or more online courses. In reference to this study, all faculty interviewed developed and taught graduate level courses.

The research was conducted with the approval of the University’s institutional review board (#IRB-201404-426). Each interview transcript was assigned a code to maintain confidentiality. An interview guide (Kvale & Brinkmann, 2009) consisting of five closed-ended questions about demographics and 11 open-ended questions about planning, implementation, and reflection was developed and used by the researchers. Interviews were conducted in person by one of the two researchers and ranged in length from 45 to 75 minutes.

Prior to analysis of the interview data, a framework schema was constructed that identified the 11 phases of Mezirow’s Transformative Learning Theory with corresponding operational definitions that were derived from the literature and agreed upon by the researchers (see Table 1). An inductive process was used to examine the transcripts of the eight participant interviews. After each researcher independently coded the interview transcripts using the Transformative Learning Theory framework schema, the coded data were integrated into one document for inter-coding agreement by the two researchers. Any data that did not clearly fit within the specified Phase, were either moved to a more appropriate Phase or discarded. After agreement of data placement within the framework schema was conducted, the researchers independently analyzed the data within each phase for patterns. Together, the researchers compared the patterns and developed themes for each phase (see Table 2).

Table 2

Thematic Analysis

<table>
<thead>
<tr>
<th>Phases</th>
<th>Themes</th>
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<tbody>
<tr>
<td>1. A disorienting dilemma</td>
<td>Courses were transformed because it was a departmental expectation rather than a personal choice.</td>
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<tr>
<td></td>
<td>Course transformation took a significant amount of time, but compensation for this extra time was inconsistent.</td>
</tr>
<tr>
<td>2. A self-examination with feelings of guilt or shame</td>
<td>Technology skills needed developing.</td>
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<tr>
<td>3.</td>
<td>A critical assessment of epistemic, sociocultural, or psychic assumptions</td>
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<tr>
<td>4.</td>
<td>Recognition that one’s discontent and the process of transformation are shared and that others have negotiated a similar change</td>
</tr>
<tr>
<td>5.</td>
<td>Exploration of options for new roles, relationships, and actions</td>
</tr>
<tr>
<td>6.</td>
<td>Planning of a course of action</td>
</tr>
<tr>
<td>7.</td>
<td>Acquisition of knowledge and skills for implementing one’s plans</td>
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<tr>
<td>8.</td>
<td>Provisional trying of new roles</td>
</tr>
<tr>
<td>9.</td>
<td>Renegotiating relationships and negotiating new relationships (critical-reflection)</td>
</tr>
<tr>
<td>10.</td>
<td>Building competence and self-confidence in new role and relationships</td>
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</table>
As a result of online teaching, faculty increased their confidence and believed they became better instructors in their face-to-face courses.

Faculty were satisfied with their courses after the transformation, yet had goals for improvement.

Most faculty were surprised they liked teaching online and were willing to do it again.

Boundaries were less defined in an online class, making them essential to establish.

Results

Phase 1: A Disorientating Dilemma

Theme 1: Courses were transformed because it was a departmental expectation rather than a personal choice. For most faculty, their courses had to be transformed for online delivery because they were part of a graduate, distant degree program. One member of the faculty admitted he initially did not want to do it, yet no participant directly challenged this expectation. Notably, one faculty member came to the university for the opportunity to acquire online teaching experience.

Theme 2: Course transformation took a significant amount of time, but compensation for this extra time was inconsistent. Faculty were in agreement they spent ample time transforming their courses. Most faculty were simultaneously developing and teaching the course. One documented spending an average of 30 hours per week. However, none of the faculty were given release time for course development, but some received payment. For those who were fortunate to receive payment, the range of compensation was $500 to $3000.

Phase 2: A Self-Examination with Feelings of Guilt or Shame

Theme 1: Technology skills needed developing. None of the faculty reported specific feelings of shame nor guilt on the outset of the transformation process. What emerged as a barrier was their lack of technology skills. When faculty were asked to rate their skills prior to teaching online, they had a mean of 3.8 (based on a Likert scale of 1 to 10). For some faculty, they did not utilize Blackboard® (online course management system) for their face-to-face courses, even though it was a university expectation.

Phase 3: A Critical Assessment of Epistemic, Sociocultural, or Psychic Assumptions

Theme 1: Faculty assumed the same level of quality could not be achieved with online instruction. What was most concerning for faculty was how a sense of community could be built. “Isolating” was used to describe online learning. They assumed interaction among
students would be limited, as would their interactions with students. Ultimately, limited interaction would affect learning outcomes.

**Theme 2: Pedagogical knowledge was critical with online teaching.** Faculty in this study were from a college of education and were pedagogical experts. Their presupposition was that technology would guide the transformative process, rather than pedagogy. Consequently, if technology guided the content rather than pedagogy, the teaching and learning process would be compromised.

**Theme 3: Not all instructors nor courses are suited for online delivery.** Some faculty assumed that instructors who were not good teachers in the face-to-face environment, would be even worse teachers in the online environment. It was believed that online teaching needed to be intentional and explicit. Beyond this, some faculty noted graduate students are better suited for online learning than those who are undergraduates.

**Phase 4: Recognition that One’s Discontent and the Process of Transformation are Shared and that Others have Negotiated a Similar Change**

**Theme 1: To negotiate their presuppositions, faculty had philosophical, broad-based discussions with instructional designers and faculty who were already teaching online.** The university’s instructional technology center hired instructional designers to assist faculty with course conceptualization and technological skills. Faculty sought them out, along with their departmental peers, to investigate presuppositions and to explore ways of transforming their courses.

**Phase 5: Exploration of Options for New Roles, Relationships, and Actions**

**Theme 1: Faculty’s dialogue with instructional designers and peers became more specific and skill-based.** Through professional discourse with other faculty and instructional designers, faculty’s presuppositions became disconfirmed. Thus, dialogue shifted from negotiation of presuppositions to acquisition of skills.

**Theme 2: Pedagogy led the exploration for quality assurance, which was influential on the selection of technology.** Most faculty held individualized training sessions with instructional designers and departmental peers. At the forefront of these sessions was how technology would support pedagogical strategies, rather than how pedagogy would be adjusted to the technology. For example, one instructor chose to use Second Life® (3D virtual world) because of how it supported her pedagogical strategy of building a community.

**Phase 6: Planning a Course of Action**

**Theme 1: Faculty used their previously taught face-to-face course as their conceptual framework for the online transformation, as it was pedagogically sound.** Because faculty considered themselves pedagogical experts, they believed their original, face-to-face course was of quality, thus these courses were their frames of reference. This established pedagogy led the
decision-making throughout the transformative process, not the technology, mainly because learner outcomes remained constant across the two delivery methods.

Phase 7: Acquisition of Knowledge and Skills for Implementing One’s Plans

**Theme 1: Faculty did not receive formal online course development training.** While some attended workshops, all preferred working one-on-one with instructional designers to learn how to effectively use technology to support pedagogy and/or to troubleshoot technology problems.

**Theme 2: Faculty sought pedagogical and emotional support from colleagues.** While, technology questions were directed at instructional designers, faculty established an informal support system with colleagues to discuss instructional strategies and assessments and to share their emotional highs and lows throughout their journey of transformation.

Phase 8: Provisional Trying of New Roles

**Theme 1: Faculty’s role shifted from the “sage on the stage” to the “guide on the side.”** Almost all faculty noted a transformation in their role; they shifted from being the leader to the facilitator. While some felt comfortable in their new role because students took more responsibility for their learning, others felt “sidelined” and like the “silent partner.”

**Theme 2: Faculty included similar face-to-face instructional strategies in their online courses.** To support these instructional strategies, each faculty member used a variety of technological tools. However, adjustments needed to be made in order to fit the online environment. Examples of adjustments included: replaced DVDs with online videos, reduced number of “in class” activities.

Phase 9: Renegotiating Relationships and Negotiating New Relationships/Self-Reflection

**Theme 1: Faculty who taught synchronously suggested online did not require a different type of instruction, whereas faculty who taught asynchronously felt differently.** Student interaction and discussion were more easily maintained in synchronous courses; so for faculty whose courses were discussion-based, this type of instruction most replicated face-to-face. For faculty who taught asynchronously, they had to become much more detailed and explicit in their instruction, as well as intentional about interaction.

**Theme 2: Some faculty noted feeling disconnected from students.** Faculty described this feeling in the following ways: “Felt like the silent partner, not the competent other,” “Outside looking in,” “I feel disempowered and disconnected,” and “I need to communicate face-to-face.” These faculty expressed a commitment to both understand this disconnection and to find ways to connect with students.

**Theme 3: Although most faculty liked teaching online, there were elements of face-to-face instruction that could not be replicated.** For some, the face-to-face environment still felt more “natural” because discussion was generated more abundantly; students were not able to
“hide behind the technology.” Additionally, they could better “feel the pulse of the class” for understanding.

Phase 10: Building Competence and Self-Confidence in New Roles and Relationships

**Theme 1: Faculty became more proficient using technology.** On a scale of 1 to 10, faculty rated their technological skills prior to teaching online as 3.8 (M) and after teaching online as 6.3 (M).

**Theme 2: As a result of online teaching, faculty increased their confidence and believed they became better instructors in their face-to-face courses.** Faculty stated they became detailed, explicit, and organized. They also incorporated more technology, mainly Blackboard®

**Theme 3: Faculty were satisfied with their courses after the transformation, yet had goals for improvement.** Faculty identified a feeling of accomplishment (e.g., “I did it!”). One even suggested being a model for other faculty when they go through the transformative process. Although satisfied, faculty’s future aspirations were on the horizon. They had goals to increase interaction, incorporate more activities, increase the amount of detail, and become more connected to students.

Phase 11: A Reintegration into One’s Life on the Basis of Conditions Dictated by One’s Perspective

**Theme 1: Most faculty were surprised they liked teaching online and were willing to do it again.** Some faculty liked how they learned to “let go” due to having less control and “go with the flow” when an idea or technology did not work. One faculty illustrated how she learned so much about herself because she was “pushed” to find different ways to teach. For another, “class time” became more application-based rather than a review of the required reading.

**Theme 2: Boundaries were less defined in an online class, making them essential to establish.** The main boundary that needed to be established was when faculty would be (and not be) available to students. This was specifically targeted toward managing email, because “24/7” was neither realistic nor healthy.

Discussion

When planning, faculty spent ample time with an instructional designer learning the technologies to support their self-identified pedagogy, thus compensation for course development was perceived as necessary. While all faculty agreed that developing a course was more time intensive, none of them were given release time in any form to plan and design their course, only monetary compensation. Compensation for development was perceived as necessary, yet there was an inequitable monetary compensation structure within the college, as well as no evidence of additional compensatory mechanisms, such as a course release or reduction in service expectations.
The majority of time faculty spent planning was with an instructional designer selecting and learning technologies to support pedagogy. Only one faculty member worked in a department that invested in a full-time director of distant education position. The others were solely reliant on the university’s center for instructional and learning technologies. This center was the only formal support structure for faculty with a focus on teaching them to independently navigate technology, consequently faculty were expected to become both content and technology experts. Beyond this, faculty had to invest time creating all frameworks to situate their content for presentation (e.g., wikis, Powerpoints). None of the faculty even suggested clerical support. Moreover, faculty had to informally solicit pedagogical consultations from peers due to their departments, college, nor university providing a more formalized service.

Faculty acceptance of online education is consistently cited as a significant barrier (Allen & Seaman, 2007), with many being hesitant due to lack of support, assistance, and training (Allen & Seaman, 2008). In this study, all but one faculty member transformed their course because it was a required course in a distant degree program, consequently making the transformation a requirement. Comparatively, Mill, Yanes, and Casebeer (2009) also conducted a qualitative study of faculty perceptions in a college of education. One of the findings was that administrative support was lacking both with infrastructure and compensation.

De Gagne and Walters (2009) did a qualitative metasynthesis of the online teaching experience across nine studies involving 203 participants. All of the studies documented work intensity with planning, designing, delivering, and evaluating online instruction, thus increasing faculty workload. “The process of designing and planning online courses is usually more time-consuming because instructors must create a more explicit and transparent course in an electronic format, which requires more deliberation in designing the process, structure, and evaluation, along with the interaction components of the course” (Anderson, Rourke, Garrison, & Archer, 2001; De Gagne & Walters, 2009). Results from their study suggested faculty need to be provided with continuous support that includes appropriate technology, ongoing training, and technical assistance, while administrators must evaluate faculty workloads.

While implementing their online course, faculty’s conceptual framework was their prior face-to-face course; interestingly, for those who delivered it synchronously, online did not require different instructional tools like it did asynchronously. Intriguingly, the professional literature suggested online not only needs different instructional and technical tools (Ray, 2009), but also a different type of pedagogy (Bates & Watson, 2008). The opposing viewpoint is that the pedagogical strategies remain intact during the transformative process, it is the medium and instructional tools that change. To illustrate, modeling is a well-accepted pedagogical strategy that went from a live demonstration in a face-to-face class to a recorded demonstration in the online class. In the current study, faculty reported how course objectives and accreditation accountability were not altered per learning format; pedagogy remained for quality assurance. This was confirmed with the findings in Johnson’s 2008 study in that “the conceptual framework, program outcomes, and student learning objectives do not change in web-based education. Students can acquire and synthesize new knowledge in this environment much as they do in a face-to-face classroom.”

For those who taught synchronously, their instructional styles were comparable to face-to-face in how students both participated in and lead class discussions/presentations. Faculty denoted minor alterations, such as a reduction in lecture time. For faculty who delivered their courses asynchronously, they also retained their conceptual, pedagogical framework from face-to-face but had to use different mediums/instructional tools for presentation of content and for
student interaction. For these reasons, a face-to-face classroom experience is difficult to replicate in the online environment without adjustments (Ray, 2009).

Keengwe and Kidd (2010) wrote, “…it is critical for faculty to not only strive to learn the technologies associated with online learning, but also understand the need to fundamentally change and transform their pedagogical approach” (p. 6). Faculty in current study were considered pedagogical experts for which their pedagogical foundation remained stable during the transformative process. Arguably, should the rudimentary principles of what constitutes quality teaching and learning be changed in the online environment? Online, web-based instruction changes the delivery not the art of teaching; undoubtedly, educators have a responsibility to uphold these traditional, educational principles (Johnson, 2008).

Upon reflection, faculty postulated that online teaching made them more efficient and effective teachers, even with their role shifting to facilitator. Because this study was situated in a college of education, most faculty were already pedagogical experts, yet online teaching further advanced their skills. They used more explicit instruction for clarity, enhanced content with new instructional tools/aids, and became more intentional about social interaction. Faculty in Johnson’s 2008 study illustrated how they were able to transfer newly learned web-based teaching strategies to the face-to-face classroom.

When teaching online, faculty find themselves in the role of learning facilitator rather than lecturer/teacher, and this change is one many faculty find themselves unprepared (Vaill & Testori, 2012). In the current study, the shift to facilitator was embraced by most, but uncomfortable for a few. Students taking responsibility for their learning is an expectation of most faculty, yet how that responsibility is operationalized varies from taking leadership roles in content presentation to taking responsibility for studying content presented by the instructor. Based on De Gagne and Walters’ 2009 qualitative metasynthesis, one of the most significant transformations was from lecturer to guide from knowledge dispenser to resource provider, and from authority to facilitator. Reflected by the recipient of the 2003 Sloan-C award for Excellence in Online Teaching, Bill Pelz, “…my ever-emerging philosophy of education increasingly diminishes the role of ‘the teacher’ in the teaching/learning equation. It took over 30 years of college teaching experience for me to realize that the learner is, for the most part, in charge of what gets learned.”

There was also growth in the affective domain of learning. Some faculty were able to “let go” (or at least “push the boundaries of control”) of the variables in online learning they could not control. Others noted a reduction in anxiety after conquering the mysterious world of online teaching. De Gagne and Walters (2009) reported that many faculty perceived online teaching to be stimulating and satisfying. This perception was shared by some participants in the current study.

References


Considerations for Implementing Lesson Study-Cross Country Challenges

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Considerations for Implementing Lesson Study: Cross Country Implications

Abstract

Despite efforts made over the last two decades by institutions and organizations to improve the teaching of mathematics (e.g., Cobb & Jackson, 2011; National Council of Teachers of Mathematics (NCTM) (1991, 2000), the reform of teaching is still a weak spot in mathematics education. According to the research of Stigler and Hiebert (1999), many mathematics teachers are aware of reforms and claim to have implemented them; however, the Trends International Mathematics and Science Study (TIMSS) (Schmidt et al., 1999; Mullis et al., 2008) continue to reveal through the analysis of videos from numerous mathematics classes that the suggested reforms are not present (National Center for Education Statistics, 2003). TIMMS results have prompted calls for improvement in professional development (Borko, 2004; Bass, Usiskin, & Burrill, 2002; Darling-Hammond & Sykes, 1999; Stigler & Hiebert, 1999), and one growing consensus concerning professional development is the opportunity for teachers to collaborate with their peers (Clarke, 1994; Johnson & Blair, 1999; Kaur, 2012; Kilpatrick, Swafford, & Findell, 2001; Wilson & Berne, 1999).

To improve this situation, lesson study focused on assessment and mathematical knowledge for teaching (Ball & Bass, 2003; Ball, Thames & Phelps, 2008; Hill et al., 2005) seems to be a potential solution. Japanese education researchers found a strategy for creating meaningful collaborations among teachers through lesson study, which consists of pre/post-collaborative work among teachers and lesson observations (Lewis, 2000, 2009; Miyakawa & Winslow, 2013; Perry, Lewis, & Akiba, 2002; Stigler & Hiebert, 1999; Yoshida, 1999). More specifically, teachers engage in a process where they first establish goals and plan a lesson based on research and collaboration, teach the research lesson, and then reflect on the research lesson (Hunter & Back, 2011; Lewis, 2002).

One challenge is when lesson study is implemented in different ways and in this case in different countries. To that end the U.S. and Thai faculty have developed a quasi-experimental research design implementing lesson study to impact teacher’s mathematical knowledge. This paper shares that process and addresses the following questions:

- How is Lesson Study defined and implemented currently in each country by the collaborators?
- How might the differences and similarities impact a collaborative research design?
- What are the implications for findings related to the specific context of each country?
- Could the process and findings be transferable to other situations and offer insights into research in mathematics education around teacher learning and teacher practices?

It is the belief of the collaborators that together and in light of the similarities and differences we will be able to offer the mathematics education research community insightful ideas to address common issues across countries through the implementation of Lesson Study. The findings related to the above questions will be shared.
Considerations for Implementing Lesson Study-Cross Country Challenges

Collaboration Background

**Partnership Development**

In both the US and in Thailand the teaching and learning of mathematics is a key focus as it has economic, educational, and political implications. Mathematics education faculty in the US and Thailand have been independently working to impact transformational changes, but in working collaboratively have found that having a country-wide impact in a systemic form is a challenge. Mathematics education faculty from both countries were introduced through a variety of connections, and from these introductions a research network was formed with the common goal of making a difference in ways that would positively impact education and related policies in the respective countries. By engaging in conversations to address common problems, the research collaborative partners engage in problem solving and potential solutions, recognizing that differences in how people represent and solve problems is a strength of their diversity. By working together US and Thai mathematics education faculty reflect Hong and Page’s (2004) notion that, “because of their greater functional diversity, identity-diverse groups can outperform homogeneous groups” (p. 16385). Working together we can generate better ideas than when working alone in isolation.

**Algebra Focus**

The research groups across the two countries identified algebraic reasoning as a content focus as it was a common content goal for both countries. Additionally, while there has been extensive research of algebraic reasoning in the elementary grades, there has been less research
that focuses on the “development of algebraic reasoning in the Middle Grades—the time period linking students’ arithmetic and early algebraic reasoning and their development of increasingly complex, abstract algebraic reasoning” (Knuth et al., 2011, p. 260). The establishment of algebra as the gatekeeper course to college and career readiness has been well documented (ACT, 2005; Moses & Cobb, 2001) and the necessity for students to develop the foundational concepts and skills for algebra has been established (NCTM, 2000; National Governors Association for Best Practices & Council of Chief State School Officers, 2010). These foundational concepts and skills have been identified as algebraic reasoning, which is described as the process “in which students generalize mathematical ideas from a set of particular instances, establish those generalizations through the discourse of argumentation, and express them in increasingly formal and age-appropriate ways” (Blanton & Kaput, 2005, p. 413). The learning and teaching of mathematics for algebraic reasoning is significant, for “teachers’ abilities to facilitate the development of students’ algebraic reasoning is the most critical factor in algebra reform” (Knuth, et al., 2011, p. 260). Thus there is a mathematical focus for this research project on algebraic reasoning.

Lesson Study

Despite efforts made over the last two decades by institutions and organizations to improve the teaching of mathematics (e.g., Cobb & Jackson, 2011; National Council of Teachers of Mathematics (NCTM) (1991, 2000), the reform of teaching is still a weak spot in mathematics education. According to the research of Stigler and Hiebert (1999), many mathematics teachers are aware of reforms and claim to have implemented them; however, the Trends International Mathematics and Science Study (TIMSS) (Schmidt et al., 1999; Mullis et al., 2008) continue to
reveal through the analysis of videos from numerous mathematics classes that the suggested reforms are not present (National Center for Education Statistics, 2003). Even though mathematics teachers have the best intentions to adopt the latest research into their classrooms, teachers often merely change surface features (Gamoran et al., 2003; Knapp & Sowder, 2004; Stigler & Hiebert, 1999). This raises the question of how to systemically and systematically move this effort forward.

TIMMS results have prompted calls for improvement in professional development (Borko, 2004; Bass, Usiskin, & Burrill, 2002; Darling-Hammond & Sykes, 1999; Stigler & Hiebert, 1999), and one growing consensus concerning professional development is the opportunity for teachers to collaborate with their peers (Clarke, 1994; Johnson & Blair, 1999; Kaur, 2012; Kilpatrick, Swafford, & Findell, 2001; Wilson & Berne, 1999). Teachers are key to changing the way students learn mathematics (Dana Yendol-Silva, 2003; Darling-Hammond, 1998). According to Darling-Hammond and Sykes (1999), the professional development of teachers is essential to improving the nation's schools. Educators cannot be expected to undergo profound changes in their instructional strategies based on ineffective one-day professional developments commonly offered (Ball & Cohen, 1999; Bass, Usiskin, & Burrill, 2002; Clarke, 1994; Darling-Hammond & Sykes, 1999; Garet, Porter, Desimone, Birman, & Yoon, 2001; Harris, Stevens, & Higgins, 2011; Koellner, Jacobs & Borko, 2011; Smith, 2001; U. S. Department of Education, 1998, 2007). According to Professional Standards for Teaching Mathematics (NCTM, 1991), an essential factor in teachers’ professional development is the degree to which they “reflect on learning and teaching individually and with colleagues” (p. 168). To improve this situation, lesson study incorporating short-cycle formative assessment and mathematical knowledge for teaching seems to be a potential solution. The term “Lesson Study”
was first used by Lewis and Tsuchida (1997) for the Japanese “Jugyo Kenkyu” and became popular word when Stigler and Hiebert (1999) published *The Teaching Gap*. Lesson Study as an innovation was developed and implemented in Japan around 140 years ago (Isoda, 2004, Shimizu, 2006) and has attracted attention around the world (Isoda & Nakamura, 2010). It has been recognized and utilized for teacher professional development in many countries around the globe. This approach utilizes a strategy for creating meaningful collaborations among teachers through lesson study, which consists of pre/post-collaborative work among teachers and lesson observations (Lewis, 2000, 2009; Miyakawa & Winslow, 2013; Stigler & Hiebert, 1999; Yoshida, 1999). More specifically, teachers engage in a process where they first establish goals and plan a lesson based on research and collaboration, teach the research lesson, and then reflect on the research lesson (Hunter & Back, 2011; Lewis, 2002). Thus both the U.S. and Thailand have adapted and implemented a lesson study approach to support the teaching and learning of mathematics in their respective countries. This paper describes the collaborative efforts of a group of researchers from each country.

**US Adaptation of Japanese Lesson Study**

In the implementation of Lesson Study as used in the participating US universities in the pilot study, the lesson study cycle described by Lewis (2002) is used where goals for student learning are formulated by the teacher group. The teachers then plan the research lesson and then the lesson is observed by those that planned the lesson as well as a ‘knowledgeable other’ or outside experts. The lesson observation is followed by a reflection session where the focus is on student learning. At times the lesson is revised and a re-teaching episode is done at some sites. The following process of Lesson Study is used: cooperatively constructing lesson plans,
implementing those plans in the classroom, post-observation discussion of the lesson plans and individual teacher teaching progression.

Because the implementation sites vary across the US schools, detailed descriptions are not provided in this paper. In general lesson study has been implemented with both pre-service and in-service teachers at the US sites reflected here. They have been conducted in some form since 2006 with some instances of systematic implementation and others sporadic. Approximately 12 middle and high schools have participated at some level.

**Thailand Adaptation of Japanese Lesson Study**

Education reform in Thailand moved forward after the 1999 Educational Acts was enacted. One outcome was the adaptation of Lesson Study as a form of professional development to support teachers in improving their teaching practices. Lesson study was seen as a comprehensive, articulated process for examining practice that many Japanese teachers had already engaged in for many years (Fernandez, Cannon, & Chokshi, 2003). In 2002 the Faculty of Education at Khon Kaen University in Thailand began using lesson study as a professional development model in which they utilized an open-approach teaching method with their teacher education program and then in several schools (Nohda, 2000; Thinwiangthong, Inprasitha, & Loipha, 2012). The implementation of lesson study was started by introducing the ‘Open Approach’, that is using open-ended problems in mathematical activities with fifteen 4th year student teachers teaching in seven secondary school in Khonkaen City in 2002. The Open Approach is used as the teaching approach within the Lesson Study process. The four phases of this teaching approach are: posing open-ended problems, students’ self learning through problem
solving, whole class discussion and comparison, and summarizing through connecting students’ mathematical ideas that emerge in the classroom (Nohda, 2000).

The process was implemented implicitly without using the term ‘Lesson Study’ (Inprasitha, 2007). This phase was called “Incubation of Idea” (Inprasitha, 2011). The second phase expanded the Open Approach and Lesson study to two districts in Khon Kaen Province and was referred to as “Experimentation in Some Schools” (Inprasitha, 2011). Since 2006 school participation has grown from 2 to 60 with both primary and middle school participation. The third phase of the process called “Whole School Approach” was facilitated by a long-term collaborative project with the Ministry of Education in Thailand.

Maitree Inprasitha pioneered the introduction of Lesson Study and Open Approach into Thai mathematics teaching circles. The term “Lesson Study” was paraphrased by him to mean “Classroom Study” in order to make it comprehensible in the Thai context. This meaning is different from the meaning used in Japan because in Japan, the unit of study is “lesson” while in Thailand, the unit of study is “classroom”. The purpose of introducing these innovations into Thai classrooms was to improve the quality of classrooms using lessons as a tool for teachers to know their classrooms better from the perspective of knowing their students, understanding their ideas, realizing their own roles and recognizing classroom culture. Therefore, to introduce innovations into classroom practice it was essential to adjust steps or processes to fit in with the working culture of each locality. There are three phases in Thailand’s lesson study process. It includes the collaborative design of a research lesson (Plan), the collaborative observation of the research lesson (Do), and the collaborative discussion and reflection on the research lesson (See) (Inprasitha, 2010 & 2011). These are generally the same as in the US implementation. One major difference between the US and Thailand implementation is that in Thailand’s particular
implementation it is a weekly planning cycle through the year in the schools in which it is being done rather than a cycle during a semester in most of the US schools related to this paper.

**Differences and Similarities between Lesson Study in the US and Thailand**

**Differences**

Because of the approach taken in Thailand through Khon Kaen University one major difference between the two countries is that the approach in Thailand is more systematic and systemic than in most US schools and certainly in the US schools participating with the universities as part of this collaboration. Another specific difference is that in Thailand the process is done weekly and is a continuous part of the planning and teaching schedule where as in the US schools it is typically a multi-week cycle during a particular semester or over a period of a few months for one particular lesson. Thai teachers in Lesson Study use a translated Japanese book that has a very specific problem solving approach and almost always relying strictly on that textbook. On rare occasions they will seek outside resources to supplement their lesson. In the US schools there is not always a specific textbook and certainly different schools within the US use different textbooks and resources. In Thailand there is one curriculum but in the US it varies potentially from state to state. Even though many US states have adopted the *Common Core State Standards* (National Governors Association for Best Practices & Council of Chief State School Officers, 2010), not all have done so. In particular several of the schools that will be involved in the US lesson study as part of this collaboration are in Texas, a non-Common Core state, and use the *Texas Essential Knowledge and Skills* (TEKS) (Texas Education Agency, 2012), while other schools are in in different states and have a different curriculum that may or
may not align with the one in Texas. This is one reason that we have selected algebraic thinking as a content focus so that there is some commonality between the content in the lesson studies across the two countries. Finally there usually is a more cross grade approach taken in Thailand than in the US. For example in Thailand grades 1-3 work together to plan a first grade lesson the first year they participate in lesson study and then they work together to address second grade lessons the second year and then the third year third grade lessons. In some of the participating US schools there is a cross grade approach. For example in one US school grades 6-8 may plan together for a specific lesson in grade 7 and the team may be teachers from one middle school or may be from 2-3 different middle schools in the district. In other participating US schools they may be teachers from one grade level all from one school. Different models are used depending on the organization, willingness to participate, and distinct needs of the schools and teachers.

One area that may be viewed as a difference and a similarity relates to where the lesson planning focus begins and where the lesson reflection session has its focus. Both begin with student outcomes and student understanding. But because getting students to think and focusing on students’ ideas is a different approach for Thai teachers from the past, Thai teachers in lesson study specifically focus their planning, observations and outcomes in relation to student thinking so they always start from the student’s ideas and understanding. In the participating US schools the student focus is not as unusual but the change is related to the reflection session. Often teachers see this type of setting as an evaluation of the teacher and the facilitators of the US lesson studies really work to be sure that the planning team sees this as focused on student learning and that the reflection session is about student understanding, not on evaluating the teacher. Although both countries do have observers for the lesson that include both the teachers who were part of the planning team and also outside experts, there are some differences is how
the observers focus their work. In some of the US lesson study groups, the observers focus on a very specific area that is determined by the teacher planning team. It might be that one observer focuses on student interactions, another on questioning used during the lesson, or another on the role the materials or technology played in developing or hindering student understanding. In the Thailand approach the observers take a more holistic approach and observe all areas focusing specifically on student thinking.

**Similarities**

Both countries have adapted the Japanese Lesson Study approach for their situation to meet the needs of their schools, teachers and students. In both countries teachers choose the content to be the focus of the lesson related to their curriculum. When the lessons are planned it is always about student learning and student understanding of the selected content. Both have observers for the lesson and the reflection session is conducted in the same manner, specifically with the teacher going first and then observers provide their comments. In both countries the observers focus on student learning and understanding, not on the teacher’s role and ability. The teachers in both countries are often afraid of being judged and evaluated. Usually neither country gets to teach the lesson again after the lesson is taught and reflected on but the lesson is used for the next year. In some cases in the participating US schools the lesson is retaught the same day after the initial reflection session. Sometimes the second lesson is observed and other times it is not. A final similarity noted relates to teachers as observers. We determined that in both countries teachers often had difficulty knowing how to observe and how to specifically look at student learning. As a result this has become part of the training and orientation when teachers begin the lesson study process.
Potential Challenges in Designing a Research Study

Because there was the potential for many challenges as we began this process, the group has met multiple times using both face-to-face and on-line formats over the past two years to discuss approaches, instrumentation, and processes. We have found some common ground and some differences as well. Among the challenges in designing a research study we have faced differences in

- curriculum and textbooks,
- school culture,
- school year calendars,
- instrumentation,
- Lesson Study adaptations,
- the role of University faculty and graduate students, and
- language and vocabulary.

In each area through collaborative discussions we are finding ways to align, modify, adapt, and adopt variations in order for us to reach our common goal of improving teaching and learning of mathematics in our respective countries.

Pilot Study Collaborative Research Design

In both countries grades 6-8 will be the targeted grade levels with algebraic reasoning as the content focus. We found this designation to be a common area providing a better opportunity to analyze results and impact. Because the two countries have different school year calendars, US schools will conduct their lesson studies (three in total) for the pilot during 2015. Since
Thailand does this continuously, they will select three schools to include in the study during the same year.

**Context and Participants**

The US participants will be mathematics teachers at middle schools in the central US at which 50% or more of the students are eligible for free and reduced lunch. The focus will be at least three different school teams consisting of 4-6 teachers at each site. The rationale for focusing on teachers in these middle schools is that based on each of the respective districts’ data, historically the students in these schools are the lowest performing and they have a common algebraic focus. Since Thailand works with many schools across the country 3 school sites will be selected to parallel the participant numbers and student characteristics in the US. It is anticipated that there will be approximately 15 teachers and 90 students from each country engaged in the pilot study.

**Methodology and Research Questions**

A quasi-experimental design and qualitative constant comparative analysis involving multiple case studies will be used for the pilot study. While centered on the overarching research question, *What is the growth of middle school mathematics teachers’ knowledge and teaching of algebraic reasoning when they participate in lesson study that intentionally incorporates short-cycle formative assessment and mathematical knowledge for teaching into the process?*, the pilot study will seek to answer the following specific research questions:

1. What effects do lesson study have on mathematical knowledge for teaching algebraic reasoning?

2. What effects do lesson study have on middle school mathematics teachers' use of
short-cycle formative assessment?

3. What effects do mathematical knowledge for teaching algebraic reasoning have on middle school mathematics teachers’ use of short-cycle formative assessment?


**Lesson Study Instruments**

Both survey data and observation data will be collected from both countries at each site. Data will be collected from the following:

- Teacher attitude and belief survey
- Student survey
- Video Recording of lesson planning sessions
- Lesson Observation notes
- Lesson Plans
- Video recording of lesson
- Video recording of reflection session
- Teacher post-reflection questionnaire

We have ascertained that some of the instruments are very similar, and are in the process of translating and confirming which instruments will be modified and/or utilized. We are currently working on aligning our instruments and on their accompanying translations. We have found that we have some common instruments and others that have minor differences, and still
others that will need more work to align with both countries. We also are finding that there will be some instances of data collection that may be different at each site given their differences in implementation. This will have to be taken into account in the analysis portion of the study in order that appropriate conclusions and implications can be documented.

**Potential Interpretation and Generalizability Challenges**

**Conclusion**

As we move forward in this research endeavor there continue to be questions that we must consider. These relate to how these findings might be interpreted and applied in individual classrooms in the respective countries, the transferability of such a model to other countries interested in this collaborative approach, the challenges faced in implementation across two countries, and the generalizability of potential findings. We do believe that by working together we can learn from each other, strengthen our research designs, improve potential data collection instruments, and inform the broader mathematics education community, in an effort to support teachers and impact student learning. There are multiple collaborations in the mathematics education community that are going across the world. As we study these types of collaborative models, we continue to learn. Collaboration may very well be the way of taking a global approach to teaching and learning mathematics in an effort to support teachers across the world in their essential and critical work with students.

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Lesson Study-Cross Country Challenges

support change. New York: Teachers College Press.


Lesson Study-Cross Country Challenges


The use of high fidelity human patient simulation is increasing in nursing education programs. Simulation is used to help enhance students’ problem solving abilities, facilitate psychomotor, communication and assessment skills, and develop their level of critical thinking. Much of the current literature focuses on the effects of simulation on critical thinking, learning outcomes, building students’ confidence, enhancing students’ satisfaction with learning, and acquiring psychomotor skills. What is absent from the literature is research on how to use this teaching modality effectively. In a teaching-learning activity, the teacher carries out intentional behaviours to assist the student in the learning process. In these purposeful teacher-learner interactions, both verbal and non-verbal actions are carried out. The nurse educator’s actions are particularly relevant in a clinical simulation where the student is attempting to apply theory to practice, and the presence of the instructor may help facilitate the student’s learning through cueing, nodding or other verbal or non-verbal behaviours. This paper presents the findings of a qualitative study, an ethnography, used to examine nursing students’ perceptions of instructors’ cueing behaviours in a clinical simulation learning experience which they find effective for their learning.
Building a Public Face for Higher Education in Tennessee

2015 Hawaii International Conference on Education
January 5-8, 2015
Honolulu, HI

Title: Building a Public Face for Higher Education in Tennessee

Topic Area: Higher Education
Format: Paper Session

Description:
This paper describes a multifaceted faculty-driven initiative sponsored by the Tennessee Board of Regents System Office of Academic Affairs, a system comprised of 6 universities, 13 community colleges and 27 colleges of technology. The goal of this multimedia initiative is to invigorate faculty scholarship, teaching and research connectivity while informing the public of the economic benefit provided, informing the taxpayer of “What we do”, “How we do it” and “Why it matters”.

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Abstract
This paper describes a multifaceted initiative to invigorate faculty scholarship, teaching and research connectivity while informing the taxpayer of “What we do”, “How we do it” and “Why it matters”.

Sponsored by the Tennessee Board of Regents Office of Academic Affairs, the 6th largest higher education system in the United States comprised of 6 universities, 13 community colleges and 27 colleges of technology serving more than 250,000 students, this faculty driven effort targets informing the general public through multiple approaches of the economic benefit provided by our institutions including building the next generation of faculty researchers.

Introduction
As in many states within the United States, the Tennessee taxpayer generally perceives teaching as a first priority at for state funded higher education institutions. Many faculty also share this priority with the expectation that they engage in research in support of their teaching, in essence to support practice. However, the current economic environment has resulted in institutions increasingly emphasizing that faculty acquire research funding through external funding sources to support their research and scholarship activities. Thus, an actual and perceived conflict of priorities for faculty and administrative demands on faculty are being increasingly experienced within higher education, especially in states such as Tennessee which has continued for the past decade to reduce state support for higher education. Faculty members who have primarily viewed themselves as educators do not always see the "fit" to this revised "institutional research agenda" as directly relevant to their teaching roles.

One approach to reconciling these seemingly discrepant roles is to engage in the necessary "critical conversations" which can demonstrate the relevancy of funded research to the educational process within higher education and to the general welfare of the taxpayer. This paper describes one portion of a value-added multifaceted initiative envisioned at the System level and transitioned to the institutional level with the support of faculty volunteers.
Method

Fifty plus faculty holding either legislatively established Tennessee Higher Education Commission’s Chair of Excellence positions and additional faculty identified through their successful competitive funding experiences in grant competitions offered at the System level were interviewed by a fellow faculty member and a System level administrator. While a list of interview questions was collected in the hopes of building a research model around the three primary research questions discussed below, the interviews were allowed to evolve during the dialogue to cover a broader spectrum of issues related to research. The first author engaged the researcher in a collegial conversation on the researcher's research involvements. The second author clarified any points of confusion, complex terminology, and proposed additional relevant questions after the initial set of questions were completed within the videotaped interview. (The minimum set of interview questions generated for the "critical conversation" can be found at the end of this discussion.)

The videos from the interviews continue to be edited into multiple, short clips around each common question for later use through several distribution channels. These venues include a *Critical Conversations* website which will feature various opportunities for researchers to connect with others with common interests, and researcher and teacher development opportunities.

Following the face-to-face video interviews, select interview participants along with additional System faculty were invited to submit articles for the System research journal, *Critical Conversations: An Interdisciplinary Journal*. The electronic journal is peer reviewed with the inaugural issue published in December 2014. It will be published three times per year offering both special topic issues and issues covering the breadth of research across the system which contributes to increasing the economy and quality of life in our state. Of the initial invitational submissions for the first issue, 60% were accepted for publication. *Critical Conversations: An Interdisciplinary Journal* will be hosted on the *Critical Conversations* website through accessible through the System website ([www.tbr.edu](http://www.tbr.edu)).

Research Questions Addressed

Three primary questions were addressed related to philosophy, infrastructure and tools, techniques, or technology:

**Philosophy.** *How do researchers successfully match the passion of the academic effort with the relevant needs of society?*
Institutions across the Tennessee Board of Regents System have been successful in responding to research funding opportunities with community and industry support in keeping with faculty members’ passion and the economic needs of Tennessee. This not an unexpected finding in this study but the recent increased funding of proposals with such support, a 23% system wide increase, seems significant.

Four potential correlating factors merit further investigation:
1) Increased funding encourages and expands the level of impact of applied research.
2) Immediate access to community & industry subject matter experts improves the external validity of the research model.
3) With a ready-made base of implementers, the faculty researcher and research team may have a greater sense of accomplishment.
4) Likewise, the pairing of university and community/industry create long term employment opportunities for students.

**Infrastructure.** *What resources do the researchers list as critical to their work?*

Students with relevant skills are the most scarce resource listed by participants in this study. Ironically, this supports the linkage of teaching and research as a complimentary to academic activities. Faculty are conducting applied research by gathering their interested undergraduate students into research teams. One Chair of Excellence in this study stated the becoming involved in his student research teams is so desired by students that a waiting list to join him has occurred. A follow-up study is underway to determine how student retention is impacted by student research involvement. This question has gained in increased interest in Tennessee as state funding for higher education has been changed from a headcount metric to a retention and graduation funding formula for state institutions.

The lack of proposal writing time is claimed as a second resource deficiency by participants. Faculty with heavy teaching loads are challenged not only to conduct basic research but also to submit proposals for external funding. Institutions in Tennessee have recently stepped up by providing increased customer focused (researchers) services to locate funding opportunities of specific interest to the researcher rather than disseminating lists of all available funding. Further, they are staffing supportive grant writers and connecting industry and community representatives with faculty and their teams.

**Tools/Techniques/Technology.** *What skill sets do the researchers self-identify?*

There were a wide variety of tools identified, as would be expected, when interviewing a diverse sample of research disciplines. A missing commonality in the researchers' toolbox was the availability of tier one
Building a Public Face for Higher Education in Tennessee

research facilities at many of our institutions. This issue is being addressed by the National Science Foundation's Experimental Program to Stimulate Competitive Research (EPSCOR) research infrastructure funding. The State of Tennessee has benefited from this program uniting faculty research efforts at tier one and two research institutions throughout the State to jointly create infrastructure at the tier two institutions. While this has had a measurable impact, it falls short of our needs in Tennessee for sustainable scientific discovery and economic development through intellectual property creation. Again, one source to cultivate in Tennessee is an increased partnership of community and industry supporters. The integration of co-located research space is also being addressed system-wide by a virtual geographically dispersed research park, as proposed by three of our institutions.

Discussion

This paper describes a work-in-progress on the necessary critical conversations to facilitate a broader understanding of the value-added nature of research conducted in state higher education institutions, its economic benefit, and its role in the quality of life within our state to the Tennessee taxpayer and general public. Deliverables from this research will include a social media campaign, a System research journal, and a repository of Critical Conversation videos designed for the following audiences:

- The next generation of Tennesseans and their school career guidance counselors who need tools to match interest & talents to career opportunities and the necessary curriculum.
- Elected officials and their staff who need "to the point" information relevant to legislation that impacts their constituents' well-being.
- Tennessee businesses and Tennesseans who need further exposure to the relevancy of higher education to their everyday lives and success.
- Faculty and staff throughout the system to discover fellow researchers in the State for collaborative efforts and support.
- An official historical record of research conducted by the Tennessee Board of Regents

The social media campaign involves several websites and blogs each designed for specific audiences listed above. The Critical Conversations journals mentioned previously will have a variety of articles to both inform the casual reader and also each of the specific audiences above. Edited footage of faculty interviews will be linked together under the title of Critical Conversations as a further supplement of efforts toward faculty scholarship, teaching and research connectivity while informing the public of the economic benefit provided.
Minimum Set of Interview Questions

1. What are you most passionate about in your research activities at this time?  
   (What are the most exciting points of your research at this time?)

2. What is the significance of your research (in your field, regionally, nationally, globally)?

3. Are there commercial applications for your research?

4. What intellectual properties (i.e., variety of intangible assets, such as musical, literary, and artistic works; discoveries and inventions; words, phrases, symbols, and designs; copyrights, trademarks, patents, industrial design rights, trade secrets) will be developed from the research?

5. Do you see the intellectual properties associated with your research turning into a commercial product or service?  
   If so, what would be the next steps in commercial development?  
   What labor force requirement would be needed for the commercial product or service?

6. What impact do you think your research will have on the economy of Tennessee, the nation or globally?

7. What are the next steps in your research?

8. What resources do you need to continue in your research?

9. What is needed for you to have the level of impact in your field you want to have professionally?

For university researchers with administrative roles,

10. What do you see as the potential impact of the research and graduate offerings on your campus as contributing to the development of the economy of the region where your institution is located, the state of Tennessee, the nation and the globe?

11. What do you see as your role in supporting research activities within the TBR system?
On Invisibility:
How Plato’s Divided Line Might Inform Educational Assessment

...[how should we address] issues that always seem to have the power to bewilder us...how are we to talk about the value of goodness or justice (or education)...[and] resist the spell that science seems to cast over epistemology...[we should not be] interested in the search for stable, eternally sound foundations and certainty and may very well regard that search as part of the problem: something from which we need to be released by a kind of therapy.1

Introduction

Educators may require therapy and Richard Smith offers timely advice for those who believe education is in crisis. It makes sense that educators concentrate on assessing students’ observable performances and actions (because they can) and do not concentrate on assessing students’ understanding and enlightenment (because they cannot). Constrained by government-imposed curriculum language where “learning goals,” “prescribed learning outcomes,” “evidence” and “proof” reign supreme, educators are asked to focus on that which is visible and measurable: actions and performances. Logically, educators are not expected to focus on that which is invisible or immeasurable: understanding and enlightenment. Further, given the limitations of curriculum language, well-intentioned educators may actually be discouraged from focusing on the invisible and the immeasurable, hired instead to simply observe and document whether “learning goals have been met” ... and their jobs depend on it.

How did we find ourselves in this crisis? We might begin by looking at our culture where, generally speaking, the looks or appearances of things are valued. Perhaps we have become a culture that privileges the visible and devalues the invisible.

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To some extent, this is reasonable for it may be difficult to appreciate, understand and value that which cannot be seen. While reasonable, there are negative consequences in privileging the visible. Educational policy-makers have grounded assessment practices in visible, measurable outcomes -- and justifiably so, as how can educators assess or measure the invisible? Arguably, though, there are risks to privileging (and sometimes exclusively focusing on) the visible: If x cannot be observed, then x cannot be measured or evaluated. And if x cannot be measured or evaluated, then maybe x is not important, useful, worthwhile or even “real.” Such thinking can create an unintended consequence of devaluing or even sacrificing the more substantive, albeit invisible, aspects of education: student understanding and enlightenment – both of which are invisible and immeasurable but surely important and worthwhile.

Privileging the visible is evident in educational literature – particularly literature focused on the importance of language when framing learning outcomes. Consider the advice, for example, from the Centre for Teaching Excellence at the University of Waterloo, where it is suggested that “[t]o be meaningful, a learning outcome needs to be built around a verb that is sufficiently precise that it can result in a measurable, deliverable outcome.” Such advice is given as “…how do you measure knowledge, understanding, appreciation or learning?” Similar advice comes from the Schreyer Institute of Teaching Excellence at Pennsylvania State University, where it is suggested that “[d]ocumenting student learning is easier if you first specify what you want students to do [and use] verbs that involve specific actions and observable behaviors.” Schreyer Institute also offers “some words to avoid when writing objectives [including] know.

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2 See Centre For Teaching Excellence at University of Waterloo website, http://cte.uwaterloo.ca
understand, appreciate, aware and familiar” as they are neither measurable nor observable. A brief on how to write learning outcomes, prepared by McMaster University, recommends that “learning outcomes should be observable and measurable” and that when writing outcomes, one should “avoid vague terms such as understand and know because they are difficult to measure.” It is significant that the authors caution educators to avoid certain frames and verbs, and stick to verbs that are observable and measurable. Further, each of the authors reference and include a list of “action verbs,” all of which appear to align with the thinking skills of Knowledge, Comprehension, Application, Analysis, Synthesis, and Evaluation, as outlined in American educational psychologist, Benjamin Bloom’s Taxonomy of Learning. The list and reference is supposedly provided to help the framer write observable learning outcomes. Unsurprisingly, such framing practices (including Bloom’s) are still used today and expected of teachers in the designing of lessons and unit plans. Such practices are also currently supported and expected in teacher training programs.

With particular attention to student evaluation and the problems educators subsequently face, the paper will explore how Plato’s description of the divided line might inform assessment practices in the future. If nothing else, perhaps the examination and exploration will provide an opportunity for some much-needed therapy for an institution in crisis.

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3 See Schreyer Institute For Teaching Excellence at Pennsylvania State University website http://www.schreyerinstitute.psu.edu
Visibility and Invisibility

...it can be onerous to think about ideas because they are the things we think with. The difficulty is due to our minds being both a part of the world while also being our means of viewing the world – a notoriously problematic duality, which people keep “solving” for us though somehow leaving us with the problem. Our ideas serve us like lenses that greatly affect what we see. Mostly we take our idea-lenses for granted and assume we see reality directly. We don’t, of course, and it is useful now and then to try to reflect on our ideas – using other ideas, inescapably.6

Kieran Egan’s thoughts limn our crisis in education and provide further therapy for educators – educators who ought to consider that they are neither directly experiencing reality, nor aware of their “idea-lenses.” Using our idea-lenses, then, it is worthwhile to reflect on the ideas of visibility and invisibility and how they might influence education. Educators generally understand philosopher John Locke’s thoughts on education in the context of his empiricist beliefs. As an empiricist, Locke suggests that we rely on that which is observable, through our sensory experiences, to interpret and know our world. Further, humans learn, develop and are educated through such experiences. Arguing that the human mind is a like a blank slate, Locke asserts that one’s tabula rasa is filled with sensory experiences from an observable world. As he writes in his Essay Concerning Human Understanding,

Let us then suppose the mind to be, as we say, white paper void of all characters, without any ideas; how comes it to be furnished? Whence comes it by that vast store, which the busy and boundless fancy of man has painted on it, with an almost endless variety? Whence has it all the materials of reason and knowledge? To this I answer, in one word, from experience: in that, all our knowledge is founded; and from that it ultimately derives itself.7

Locke’s empiricist views in general, and view that the workings of the human mind are visible in particular, are significant assumptions – assumptions that some educational policy-makers hold today. Perhaps this partially explains why educational ideas like

understanding and enlightenment are “sidelined,” to say the least, and why observable actions and performances are embedded in current assessment requirements. But Locke also writes, “…in truth the ideas and images in men’s minds are the invisible powers that constantly govern them.”

Contemporary empiricists may very well concur with Locke that the mind’s workings are invisible. What we should attend to in education, therefore, are its visible performances and actions. It is not that there is anything wrong with attending to the mind’s visible performances and actions, but rather that curriculum assessment language ignores and dismisses perhaps some of mind’s most significant (though invisible) powers: understanding and enlightenment. Educational policy-makers have an investment in assuming (or at least saying they assume) that the human mind and its workings are empirically visible and observable. It justifies assessment policies – policies that require and expect teachers to observe, measure and assess. But exactly what are teachers assessing?

The idea of invisibility in Plato’s Republic may provide educators with some answers and therapy regarding educational assessment. Plato’s stories of the Ring of Gyges, the Allegory of The Cave along with his description of the divided line, can act as idea lenses for educators. Through these lenses, educators can appreciate how what they are evaluating is logically limited to the visible. More importantly, the most substantive parts of the educated mind, understanding and enlightenment, are invisible and therefore immeasurable.

Plato’s Ring of Gyges story helps us to consider the notions of both invisibility and observability, as they relate to educational assessment and evaluation practices. In the dialogue, Plato proposes a thought experiment in which we consider how we would
behave if we possessed a ring that made us invisible. Glaucon’s assertion that no one would be so incorruptible that he could, “…bring himself to keep away from other people’s property and not touch it, when he could with impunity take whatever he wanted…kill anyone, free all those he wished”9 leads him to conclude that man only appears just or virtuous so that he may protect his reputation and avoid punishment. No one possesses “an iron nature” and were the just man and the unjust man both given invisibility rings, Glaucon argues that their “…actions would be in no way different from those of the other and they would both follow the same path.”10 Suppose that Glaucon is wrong, however, and that there are incorruptible men who would never steal even if invisible. Perhaps such men believe that stealing, in and of itself, is wrong. Suppose further that such a just man and an unjust man (who would steal if he were invisible) both refrain from stealing while at market. In this case, the just man does not steal because he believes that stealing is wrong in and of itself. The unjust man does not steal because he wishes to appear virtuous, protect his reputation and avoid punishment. While inwardly, the men’s thoughts and motives are clearly different, outwardly their behavior is identical. They both appear just. From the perspective of an observer, then, there is a sense of inaccessibility, immeasurability and invisibility with respect to the private understandings of the just man and the unjust man. This is analogous to the educator’s sense of inaccessibility, immeasurability and invisibility of a student’s private understandings. Certainly educators can imagine a student who may outwardly appear to understand a formula in mathematics or a concept in science (as evidenced in a test mark or a verbal response to a question in class) when in fact, the student does not understand.

10 See Plato, Book II, 360c.
Similarly, it may outwardly appear that a student does not understand a formula in mathematics or a concept in science (as evidenced in a test mark or a verbal response to a question in class) when in fact, the student does understand. Regardless, educators likely know that evaluation tools are limited to measuring and assessing the visible (such as what a student can do or whether a student can complete a particular task) and that they are incapable of measuring and assessing the invisible (such as understanding or enlightenment). As earlier stated, however, while such invisible things in the mind are not assessable or measurable like actions and performances are, they may be more significant and influential in a student’s journey toward enlightenment and in developing a student’s understanding.

Like the Ring of Gyges story, Plato’s Allegory of the Cave and the related description of the divided line offer educators opportunities to reflect on current assessment practices. In his allegory, Plato describes human beings as prisoners in a cave who, tied in chains since birth, watch shadows on the cave wall and mistakenly believe the shadows to be reality. One prisoner eventually breaks free from his chains and ventures out of the cave, discovering reality and “seeing the light.” Wanting to similarly enlighten his fellow prisoners, he returns to the cave to explain his experience and inform the prisoners that while he has seen the truth, they see mere shadows of the truth. Predictably, the cave-dwellers are not persuaded of the truth of his account.

The prisoner’s dark cave is ironically the world of sight or the world of the visible, while the journey out of the cave to seek enlightenment and understanding is a journey toward the intellectual world of the invisible. As Plato writes,

…the prison-house is the world of sight, the light of the fire is the sun, and you will not misapprehend me if you interpret the journey upwards to be the ascent of the soul into the intellectual world according to my poor belief, which, at your desire, I have expressed,
whether rightly or wrongly God knows. But, whether true or false, my opinion is that in the world of knowledge the idea of good appears last of all, and is seen only with an effort; and, when seen, is also inferred to be the universal author of all things beautiful and right, parent of light and of the lord of light in this visible world, and the immediate source of reason and truth in the intellectual; and that this is the power upon which he who would act rationally either in public or private life must have his eye fixed.11

“Seeing” in the invisible realm outside of the cave differs from seeing with one’s eyes in the visible realm within the cave. It is significant, therefore, that Plato follows this dialogue with the description of the divided line, a related discussion to the Allegory of the Cave and one with important connections to educators’ current assessment practices. Consider the following diagram,

![Plato's Figure of the Divided Plane](image)

where Plato places noesis (understanding) and dianoia (reasoning) highest on the line, while pistis (opinion) and eikasia (images) are lowest on the line. The movement along the divided line mirrors the prisoner’s ascent out of the cave. That is, we all begin as prisoners, engaged by what we see with our eyes - “shadowy images” on the cave wall.

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(eikasia). These shadowy images gradually frame our opinions of reality (pistis). In a cliché sense, we are all prisoners of our own beliefs. Eventually, however, we break free of our self-imprisonment and develop reason (dianoia), ultimately moving out of the darkness of our cave toward enlightenment and understanding (noesis). Understanding in this realm might be described as akin to “seeing” with one’s mind or soul but importantly, it is beyond the type of seeing with one’s eyes (eikasia) experienced whilst in the cave.

The journey out of the cave also mirrors the ideal journey of a student in pursuit of enlightenment and understanding. Peter Losin, in “Education and Plato’s Parable of the Cave,” describes how the journey is central to the idea of education and the role of the educator. As he writes,

…the upward journey out of the cave into daylight is the soul's ascent to the intelligible realm. The educator's task is a matter of turning souls around…Such reorienting of souls has affective or desiderative dimensions as well as cognitive ones. Early education…wakes up the spirited part of the child's nature and enables it to work together with reason, imbuing the soul with that order and grace necessary for later cognitive development.12

Losin further notes that, “…the cave is the region accessible to sight or perception; the world outside and above the cave is the intelligible region accessible not to perception but to reasoning.”13 The realm of the visible or sensible for the student, are the lowest forms of mental experiences, occurring deep within the cave. Such perceptions nonetheless shape the student’s opinions of reality. Significantly, reason and understanding (the highest forms of mental experiences) are beyond the visible and the sensible, ostensibly occurring in the realm of the invisible.

13 Losin, p. 50.
Plato’s description of the divided line and the journey out of the cave can help educators explore the negative consequences of privileging the visible. Beliefs and perceptions take place in the realm of the visible, deep within the cave. But such perceptions can be faulty and superficial. Current assessment practices can only measure the visible activities of the mind – faulty and superficial though they may be. Further, as assessment tools are focused on the observable or visible, including student assignments and prescribed learning outcomes, educators may only be measuring a student’s lowest “cave experiences” or pistis … their perceptions and opinions of “shadowy images.” It is significant that a student’s highest experiences, enlightenment or understanding (noesis), are unobservable and therefore immeasurable. The most elevated, arguably most important forms of knowing (understanding and enlightenment) may be an entirely invisible experience - at least an invisible experience to any outside observer such as an educator. Does government-imposed curriculum language ultimately force educators to keep students in the realms of pistis and eikasia? It is not so much that assessment of the visible is wrong but that such assessment is incomplete. In addition, there is a risk of mistakenly concluding that the invisible or immeasurable (such as understanding and enlightenment) are not important, useful or worthwhile.

Conclusion

…[the] so-called hard sciences that deal with the observable and measurable became socially privileged. The core reason for the privilege here is the ability to control and manipulate.¹⁴

Given that they are situated in the realm of the invisible and therefore the immeasurable, ideas such as attaining dianoia and noesis are not likely to reform

assessment practices any time soon. And sadly so. Ideas like proof, accountability, evidence, data and support seem to be unquestioned requirements of any worthwhile idea of education and tool of educational assessment. In The No Child Left Behind Act Of 2001, for example, the United States Congress passed legislation “with the goal of supporting educational practice based on scientific evidence.” The Act specifically outlines the guidelines and importance of scientifically-based research in Title IX, Part A, as it states that such research must: “employ systematic, empirical methods that draw on observation,” and that it “relies on measurements or observational methods.” The importance of observable, measurable assessment methods in education is also described as “closely aligned with approaches to research that are at home in the positivist paradigm.” The paradigm has as its underlying assumption that “the social world can be studied in the same way as the natural world” and “that there is a method for studying the social world that is value-free and the explanations of a causal nature can be provided.” Given the influence of these privileged paradigms and their accompanying methods on education, there is a risk that government-imposed assessment practices privilege the visible aspects of education (actions and performances) while devaluing the invisible aspects of education (understanding and enlightenment).

Philosopher, Jacques Ranciere writes of politics as disruption or interruption. As he states, “[p]olitics exists when the natural order of domination is interrupted by the

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17 Mertens, p. 32.
18 Mertens, p. 32.
19 Mertens, p. 8.
20 Mertens, p. 8.
21 Mertens, p. 8.
institution of a part of those who have no part.” 22 Maybe educators need to become more political – at least in this Rancierian sense. It is worthwhile to interrupt current educational dialogue and suggest that curriculum and assessment language may, albeit unintentionally, lead to valuing students’ observable performances and actions, while devaluing students’ understanding and enlightenment. Such an interruption makes room for new perspectives - perspectives that might include Platonic ideas not limited or constrained by the current, privileged assumptions of measurability and observability. Such an interruption might just be the therapy educators need in order to re-think, re-envision and re-invent our view of education and the role of educational assessment.

References


Centre For Teaching Excellence at University of Waterloo website: http://cte.uwaterloo.ca


Schreyer Institute For Teaching Excellence at Pennsylvania State University website http://www.schreyerinstitute.psu.edu


*Diagram of Plato’s Divided Line: http://www.google.ca/imgres
Abstract

Co-teaching implemented with fidelity has a profound impact on a range of learners with and without disabilities from a variety of cultures (Dieker, 2011; Murawski, 2010; Friend, 2008; Scruggs, et al, 2007 ). By effectively co-teaching and utilizing differentiated instructional strategies that promote student engagement, teachers will have a substantial impact on achievement for all learners (Marzano, 2010). Too often, administrators and co-teachers are not provided effective professional learning that teaches best practices for the 3 C’s of Co-teaching (co-planning, co-instructing, and co-assessing). Schools often focus on co-teaching in isolation resulting in a splintered approach to implementation and program implementation. The lack of a systemic support structure and underutilization of the special education co-teachers’ skills and expertise are commonly cited as the reason for in effective outcomes (Murawski, 2008; Friend, 2008; Scruggs, et al, 2007). This session is grounded in longitudinal research and evidence-based practices on effective inclusive practices from a variety of school communities across the country. The strategies presented are based on case studies obtained from successful inclusive school communities from around the country (Dieker, 2011; Murawski, 2010; Friend, 2008; Scruggs, et al, 2007).

Relevance to Learners, Families, and/or Educators of Diverse Groups

The instructional practices highlighted in this session have been successfully applied within both rural and urban settings, and have also been utilized to improve student engagement. When both teachers maximize their role and provide differentiated instruction, student engagement increases. Student engagement is pivotal to the success of students regardless of disability, culture or socioeconomic status (The Highly Engaged Classroom, Marzano, 2011).

Usefulness to Practitioners

Participants will gain a greater understanding of the need for focused collaboration in order to enrich the inclusive environment and vastly improve the capacity of schools to provide high quality educational opportunities for students with disabilities. In this session, I will provide
participants with a brief summary on the core components of effective implementation necessary for effective co-teaching along with how these components can be applied within the context of a co-teaching classroom. In particular, participants will gain information on how to create a co-teaching partnership that increases student achievement. The main focus of the session will be to provide participants with strategies and resources that they can take back and utilize to create successful inclusive communities with strong co-teaching teams.

This interactive workshop will address: (1) roles and strategies to maximize the power that two teachers with varying strengths and backgrounds can have on student engagement, learning and achievement (2) Universal Design for Learning differentiation instructional strategies to meet the needs of all learners. Participants will leave the interactive workshop with practical resources on how to effectively co-teach, incorporate innovative technology, and utilize differentiated instruction to increase student success.

**Participant Outcomes**

Participants will be able to:

1. Examine implications of successful co-teaching practices to student outcomes across rural, urban and suburban settings.
2. Apply core components of effective inclusive practices to improve co-teaching fidelity for all students.
3. Discuss ways to incorporate the Co-Teaching Components into new or existing co-teaching programs.
4. Describe instructional methods that are used to meet all learners’ needs and increase student achievement.

**Relevance to Learners, Families, and/or Educators of Diverse Groups**

The instructional practices highlighted in this session have been successfully applied within both rural and urban settings, and have also been utilized to improve student achievement. The co-teaching practices highlighted in this session have been successfully applied within both rural and urban settings, and have also been shown to improve student engagement and parental involvement, which impacts all students.

**Evidence of the Effectiveness of the Practice or Content to be Presented**

A. This session is grounded in co-teaching research and evidence-based practices. The strategies presented are based on research obtained on successful inclusive school communities (Dieker, 2011; Murawski, 2010; Friend, 2008; Scruggs, et al, 2007). Maximizing both educators in a co-taught setting strongly correlates to achievement for all students in the inclusive classroom. Using evidence-based practices, this interactive session will provide participants with a repertoire of instructional strategies for co-planning, co-teaching, and co-assessing to enhance student learning.

For handouts, slides, and further support on Co-teaching Practices contact Savanna Flakes at savanna.flakes@acps.k12.va.us and visit Readingforabetterfuture.com
Abstract

Feedback is required to support learners in skill acquisition, cognitive advancement and professional development (Archer, 2010) and is a useful strategy in the development of critical thinking (CT). Feedback also helps learners understand where they are, where they have improved, and what future development is needed. Effective feedback is used to promote desired outcomes.

The purpose of this study was to investigate whether nurse educators use questions as a form of feedback in evaluating students’ scholarly papers and if so, identify whether these questions are congruent with those levelled at stimulating students’ CT. It is also the purpose of this study to determine whether nursing students read and use the feedback and which types (e.g., questions, comments, check marks, and/or others) they prefer and why.

This study uses a descriptive/exploratory design. The population of interest are all students enrolled in two undergraduate programs at the FON, University of Alberta (Canada) and the scholarly papers they wrote in theory courses during the 2013/14 academic year (n=1748). The sample was one of convenience. Students were asked to submit hard copies of their papers in a secure Drop box after they blacken or whiteout their names and those of tutors. Participants also completed an online survey regarding their preferences and use of feedback.

Each paper was assigned a unique number and organized according to program, year/term and course. All types of feedback provided by educators, including questions, were extracted and recorded in an Excel spreadsheet. These will be coded and analyzed for the type of comments (corrective, directive, constructive and positive), and questions using Bloom Taxonomy as a
framework. Comments and questions congruent with CT (e.g., analysis, evaluation) will be summarized using descriptive statistics. Student survey data such as program, year of program, gender, et cetera will be summarized and analyzed using descriptive statistics. Participants’ responses to open ended questions regarding their reasons as to why they do not read and/or use tutors' feedback provided in their scholarly papers will be summarized and analyzed for themes.

This presentation will begin with an overview of learning process strategies, and the nature and types of feedback. This introduction will be followed by reporting on the findings of the study described above. Based on the analysis of the data, conclusions, recommendations and strategies to enhance the nature of feedback provided by educators to students in any course of study will be discussed.

Title: Characteristics of Non-Traditional University Students and The Challenges They Face In Pursuing a Graduate Degree

Topic Areas: Adult Education, Higher Education

Presentation Format: Paper Session

Presentation Description:
Non-traditional higher education students are the “new majority” on campuses across the nation. These students are 25-years or older, who have entered college for the first time, or have re-entered college after a break or gap in their education. Although enrollment of this student population is increasing, they are not completing their degree programs. This qualitative research paper describes characteristics of non-traditional university students and the challenges they face pursuing their graduate degrees.

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13th Annual Hawaii International Conference on Education, January 6-9, 2013
Abstract

Student Paper

Background: Historically, postsecondary education and training have been a pathway to socio-economic mobility in the United States. According to the 2012 National Center for Education Statistics, enrollment of students 25-years and older increased by 42 percent from the years 2000 to 2010. These students are not traditional higher education students. In fact, they are represented in the research literature as “non-traditional” students.

A non-traditional college student is an adult 25-years or older, who enrolls in college for the first time or re-enters college after a break or gap in their college education. According to the Complete College America Report (2011), “Non-traditional students are the new majority student population” (p.6). These students are returning to college in record numbers, and for a myriad of reasons (Schaefer, 2010). Unfortunately, non-traditional students are not completing college degree programs. There is a body of research supporting the view that educational attainment is directly linked to occupational attainment. An uneducated and unskilled American population weakens the American economy and further lessens the quality of life for its citizens (O’Lawrence & Martinez, 2009).

Purpose: The purpose of this qualitative study was to identify characteristics of non-traditional university students and challenges they face in pursuing their graduate degree. This study’s empirical intention was to describe students enrolled in a graduate grant writing course at the University of Nevada, Las Vegas (UNLV) during the spring 2014 semester.

Methodology: This study utilized the qualitative research process of observations and interviews to describe adults learning in a graduate course at UNLV. Primary data collection consisted of taking field notes. The data collection consisted of face-to-face interviews with informants. The class participants consisted of a professor, eleven-student participants; six males and five females from diverse ethnic and racial cultures. Their ages ranged from the late 20s to late 50s. Three females and one male volunteered to participate in the interviews. There were four weekly classroom observations, and four hours of face-to-face structured interviews. The interviews focused on three areas; student’s demographics, reasons for attending college and challenges they face as university students. Transcriptions of interviews were shared for “member checking” with each informant for accuracy of researcher’s interpretations. In addition, the process of triangulation was used as a validation strategy.

Results: The results rely primarily on the interview data. Non-traditional students are proactive in balancing their education, employment, family and personal relationships. In addition, they have expectations and the determination to achieve their graduate degree, in spite of the challenges they encounter.

Conclusion: The overarching findings were that non-traditional adults are diverse and face unique challenges to pursuing their educational goals. This study’s findings suggest that UNLV must acknowledge and develop support systems that remove barriers for non-traditional university student’s pathway to degree completion. In conclusion, UNLV must provide more online courses and online degree programs. Future studies might focus on non-traditional freshman students.
The Use of the Capstone Course in the Assessment of
An Online Gerontology Graduate Program

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Abstract

The twenty first century need for trained professionals in the growing area of elder care is clear. Higher education will be well advised to continue the development of gerontology-related educational programs that can address this need. In a higher education world that attempts to meet the educational, professional and personal requirements of the student and the profession, the more specific need for distance learning options has become essential. In 2010, Webster University, a leader in online global education, began to meet online training needs in the area of graduate education with a fully online Masters in Gerontology Program. A major concern in the development and implementation of this program is student and program assessment. This paper presents the student assessment methods used with the Webster University Online Gerontology Program and offers suggestions for colleagues at other institutions.
Providing evidence of program effectiveness in achieving program learning outcomes in the context of the overall assessment in higher education is essential (Majeski, 2007). Given population demographics suggesting an increasing market for individuals with both general and specialized training related to older adults, the assessment of student learning in Gerontology programs is a necessity and an ongoing challenge for those who work in higher education. Further, in light of a growing trend toward online education, the assessment of student learning in online programs presents unique issues that can be addressed in numerous ways by those academics who administer and teach in the online format. This article will focus on the assessment methods used in the graduate degree program in Gerontology offered online by Webster University.

The article will relate information about the program in general, the major areas of assessment used in the program, the components of the capstone course used in assessment and the attention paid to the particular needs and styles of learning presented by students who participate in this online Gerontology program of study. We will also offer suggestions for colleagues who may wish to implement similar assessment models at their own institutions.

**Overview of the Program**

The Gerontology Masters Program was redesigned and placed entirely online in
August of 2010. The authors of this work developed and implemented this online course of graduate study and both authors currently teach in the program. This program is currently offered at over 60 campus locations of Webster University. These campuses are all located within the United States. Students have three main options within this program. These options are: Master of Arts in Gerontology, Graduate Certificate in Gerontology, and the MBA. The curriculum of the Master of Arts in Gerontology (a 36 hour program of study) is designed to provide the student with the skills and knowledge necessary for careers related to gerontology. Within this framework, students are provided with a broad educational base concerning the impact of aging on individuals and cultures. The Graduate Certificate in Gerontology (an 18 hour program of study) and the MBA with an emphasis in Gerontology (a total 54 hour program of study) are both designed to expand students’ marketability and skills in their chosen professions by providing a broad educational base regarding the aging of individuals and society. This article will relate the student assessment methods used in the Master of Arts in Gerontology option. All GERN Program courses are offered in the nine week online format.

The majority of the students enrolled in the Webster University Master of Arts in Gerontology Program option are working, or have, worked in the field of gerontology. However, all students who enroll in any of the three program options have the opportunity to pursue a practicum experience. The practicum provides students with an opportunity to integrate coursework with first hand professional training within gerontological industries related to the older population. If chosen, the practicum can be pursued within the context of the students’ current employment setting or in a new setting.
entirely. The practicum experience should help students to begin identifying setting for consideration for future employment and expand their professional contacts within the field.

The Online Gerontology Program offers a variety of courses. These courses include; Gerontology, Economic Issues for Older Adults, Psychology of Aging, Physiology of Aging, Management of Programs for Older Adults, Research and Assessment in Gerontology, Social Science Perspectives in Gerontology, Issues in Gerontology Mental Health, Issues in Gerontology Alzheimer’s Disease and Related, Issues in Gerontology Transforming the Future of Elder Care, Issues in Gerontology Research and Writing Strategies, and Integrated Studies in Gerontology. All of the course offerings have specific learning outcomes related to the student on the syllabus and for which each professor is responsible for implementing during the process of the course. The learning outcomes for the required gerontology courses address the areas of gerontology program assessment required for completion of the program of study. The GERN 6000 course (Integrated Studies in Gerontology) is similar to a graduate thesis course. This course represents the final overall assessment of those eight assessment area and is related to the student in the course learning outcomes. These eight assessment areas represent the essential program level learning outcomes related to the student through their coursework and over their program of study in the Gerontology program.

The Eight Essential Learning and Assessment Areas

The eight Areas of Knowledge that this Online Gerontology Graduate Program considers to be essential are; interdisciplinary issues, economic issues, physiological changes, psychological issues, theoretical knowledge, empirical knowledge, management
and administrative issues, and social and political issues. Each of these areas are addressed in the required coursework that occurs before the capstone course (GERN 6000 Integrated Studies in Gerontology) and students must present evidence that they have knowledge in each of these areas as they proceed through these required courses. These eight areas represent the essential learnings that the student must attain and show evidence of attaining before completion of the Online Program in Gerontology. The eight Knowledge Areas are, therefore, directly related to the required coursework previous to the capstone course and are assessed, in total, through the capstone course.

The Capstone Course

Statement of Learning Outcomes

Each course in the Online Gerontology Program presents the student with relatively specific Learning Outcomes for that course. These Learning Outcomes help the student understand the knowledge, skills and abilities that are expected outcomes of their successful completion of the course. As has become common practice within higher education curriculum design, learning outcomes for each course are based on Bloom’s cognitive taxonomy (Anderson et al., 2000). Consistent with this taxonomy, each of the required GERN Online Program courses include at least one of the eight Knowledge Areas in their statement of Learning Outcomes. By the time students finish their required program coursework (before the GERN 6000 capstone course) they will have addressed each of the eight Knowledge Areas within the Learning Outcomes of their coursework. Thus, the Learning Outcomes of the GERN capstone course include all eight Knowledge Areas.
The Learning Outcomes related to the student on the course syllabus of the GERN 6000 course are;

1. The student will be able to develop a publication quality Review of Literature using APA publication guidelines.
2. The student will be able to fully research a topic in the field of gerontology and integrate research material into a publication quality Review of Literature.
3. The student will be able to construct a Critical Analysis and Application paper (evaluation) that integrates the material researched in the Review of Literature.
4. The student will be able to prepare and present a PowerPoint Presentation.
5. The student will be able to construct a single page critique of their PowerPoint Presentation.
6. The student will demonstrate the ability to integrate the following gerontology areas into the research, preparation and presentation of the requirements of this course: interdisciplinary issues, economic issues, physiological changes, psychological issues, theoretical knowledge, empirical knowledge, management and administrative issues, social and political issues.

The major assessment aspect of the GERN 6000 course can be seen in the last of these learning outcomes (6) that relate to the eight Knowledge Areas. Each of these eight areas are to be addressed in the Review of Literature assignment and any four of the eight areas are to be addressed in the Critical Analysis and Application paper. The student must document these requirements in their work and the course professor is responsible for a students’ successful completion of this requirement.
Assessment and the Major Course Requirements

Successful completion of the GERN 6000 course requires that the student complete and submit four assignments. These assignments include (1) Literature Review, (2) Critical Analysis and Application Paper, and (3) a power point presentation of both assignments. These assignments require students to demonstrate higher-level skills within the revised Bloom’s taxonomy model (Anderson et al., 2000). As Program Directors, we can then easily assess whether or not students are meeting the learning objectives at both the individual course- and overall program-levels. Consequently, the model we use in this course provides information on the degree to which lower-level courses within the program achieve their learning objectives. Assessment reports then help identify overall patterns of relative strengths and weaknesses within our curriculum. Further, this model affords us the opportunity to look critically at the overall program in order to evaluate the degree to which we are meeting our overall program learning outcomes. In short, this is an effective and efficient method of course and program assessment.

The Literature Review Paper. The completion of a publication grade literature review is primary focus of this class. The assignment is completed over the nine week duration of the course. Detailed information concerning the structure and content of the work are provided to the student in the online course materials. The basic weekly expectations for the assignment are communicated to the student on the syllabus with additional details found within the weekly content and assignments.

The literature review assignment is developed over the duration of the course. Each week, students are required to submit material in the development of this work.
Submissions begin in the second week of the class with a submission of the proposed title and basic outline of the project. Submissions continue with progressively more completed material being submitted for professor approval. The ‘TurnItIn’ function within our university’s course management software (i.e., Canvas by Instructure) is utilized for submitted material beginning in the fifth week. The professor for the course approves and relates information concerning improvement on a weekly basis via email, phone or both. The completed review of literature is submitted for final grading in the final week of the course. The review of literature must be a minimum of 35 pages (at a 12 font or less) and include at least 25 references. The paper must be publication grade and be written according to American Psychological Association Publication guidelines. The work must not contain more than two percent direct quotes, as determined by the TurnItIn Originality Report.

The review of literature must also include a document (provided to the student) that relates evidence (by paragraph and page) of at least one of each of the eight knowledge areas within the review. Thus, the student is responsible for identifying where and how he or she demonstrated evidence of each of the eight knowledge areas, which relate to the larger learning outcomes of the program.

**The Critical Analysis and Application Paper.** Students are required to prepare a separate 8-16 page Critical Analysis and Application paper. This Critical Analysis and Application work is also double spaced and APA style. It is an editorial and written in first person. This paper is to include a Title page, Introduction, Critical Analysis Section (4 page minimum) Application Section (4 page minimum), Reference page(s), and the LO Location page. This Critical Analysis and Application is graded (20 points max.).
Students are expected to begin working on this by Week 7, with the first draft due in Week 8 and the final version submitted in Week 9. Contrary to the Literature Review, this work is expected to be critical, both conceptually and methodologically. It is also expected that students will include an Application section in which they discuss how practitioners might integrate and apply the relevant research literature within the “real world.” This Application piece affords students the opportunity to make connections between the online classroom, academic literature, and their own professional lives. Further details, including grading rubrics, about these assignments, as well as the associated PowerPoint presentations, are available upon request.

**The Role of Faculty in Assessment**

**The Assessment and Monitoring of Program Faculty**

Given that our program is offered entirely online and staffed primarily by adjunct faculty, it is imperative that we continuously assess and monitor program faculty. One of the most significant benefits of program as currently constituted is that the online model provides a quality control mechanism. More specifically, whenever a particular course is offered, the Program Directors can feel confident that the instructor of record is aware of and understand the corresponding student learning outcomes. When we develop and revise our courses, we do so within a purposeful framework driven by course-specific student learning outcomes, which are then mapped on to the larger program learning outcomes. As noted above, the nature of the GERN 6000: Integrated Studies Capstone course allows us to identify relative strengths and weaknesses with respect to our program learning outcomes. We are able to quickly identify where there might be issues that warrant further scrutiny. By extension, we are also able to identify which faculty are
teaching courses that meet the required learning objectives. Thus, the monitoring of program faculty involves not only examining course evaluations (which are certainly an imperfect instrument for evaluating faculty performance, e.g., Gravestock & Gregor-Greenleaf, 2008), but also the extent to which students who complete earlier foundational courses are able to successfully demonstrate their learning across all eight of the knowledge areas covered within the program.

**Adaptation to Changes in the Field**

The eight Knowledge Areas assessed in the Gerontology Online Program represent major, program-level learning outcomes. These Knowledge Areas are considered essential for a well-rounded education in the field. However, these eight Knowledge Areas are general areas. Learning Outcomes found within the required (and elective) courses are often more specific. These course specific Learning Outcomes are often directly related to the Knowledge Areas and the specific content of the course. These more specific Learning Outcomes found in specific courses represent the detailed information often required in actual Gerontological practice. Since practice requirements are always in a state of change, it is often necessary to modify specific course Learning Outcomes to address these changes. The Program is also well-positioned to change or modify any of the general eight Knowledge Areas if changes in the field occur. To support this point, we are presently revising our learning outcomes to more explicitly map on to the Gerontology Competencies developed and endorsed by the Association for Gerontology in Higher Education (AGHE). Although these competencies represent a work in progress, we have begun to situate our current learning outcomes within the larger categorical competencies developed by AGHE. These include (1) Foundation
Knowledge and Skills (which provide an orientation to Gerontology), (2) Skills Needed Across Fields of Gerontology (which aim to identify and develop specific processes, tools, and skills for practitioners), and (3) Skills for Contexts of Gerontology Careers (which aim to provide hands-on experience in various fields of Gerontology).

At present, our course- and program-level learning outcomes have focused primarily on the Foundation Knowledge and Skills category, yet we have responded to students’ needs by developing new courses as demand warrants. For example, we have worked closely with our faculty to develop timely “Issues” courses focused particularly on the second (Skills Needed Across Fields of Gerontology) and third (Skills for Contexts of Gerontology Careers) proposed competency categories. These courses are more applied and professional in orientation and include Disaster Preparedness for Older Adults, Transforming the Future of Eldercare, and Research and Writing Strategies for Gerontologists. The program is, therefore, able to modify a wide variety of program or course level learning requirements dependent on changes in the field. This allows the program to quickly adapt to changes in the field while maintaining the overall academic rigor and quality of the program.

Summary

It is anticipated that the future of Gerontology practice in the United States will involve accreditation, which will undoubtedly require Gerontology Programs to document that specific program learning outcomes are taught to students and assessed by the program. This being the case, all Gerontology Programs must be able to readily adapt to changes in the field. We believe that our model of assessment in our GERN 6000: Integrated Studies capstone course provides a framework for adapting to such changes
while also monitoring and preserving the overall quality of the program. Although our model works well within the context of an online graduate program at a liberal arts university, we encourage our colleagues both within and outside of Gerontology to adopt this framework to suit the needs of their own programs at their respective institutions.
References


1. TITLE OF THE SUBMISSION: ACADEMIC STRESS AND PERFORMANCE EFFECTIVENESS OF LECTURERS IN TERTIARY INSTITUTIONS IN NIGERIA

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5. ABSTRACT: The study was motivated by the need to investigate the influence of academic productivity stress on performance effectiveness of lecturers in tertiary institutions in Cross River State, Nigeria. Four tertiary institutions were randomly selected for the study. Data on academic stressors and performance effectiveness indicators were collected from the sampled institutions. The one-way analysis of variance (ANOVA) with its associated post-hoc comparison differences was used. Findings revealed a significant influence of academic productivity stress on the performance level of academics among others.

Keyword: Academic stress, performance effectiveness, tertiary institutions, lecturers.

SUBMISSION ID NUMBER IS “411”
Integrated Communications Study – A Work in Progress
Topic Area: Curriculum, Research and Development
Format: Paper Session

This presentation is a work-in-progress report on a collaborative approach with program instructors to integrate curriculum objectives from the required communications course with their core technical courses. The purpose of this integrated approach is to develop the required skills in a more discipline-specific manner to improve engagement and proficiency in communication skills. The assumption is this approach will produce better communication skills than when the skills are taught in isolation.

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Focus Group:
The program of study for this approach is first year Computer Aided Drafting and Design (CADD) students.

Background:
The students in this program take one communications course in the second semester of their program though they must submit written pieces and deliver oral presentations in the first semester courses. Students have commented on this ineffective sequencing, also acknowledging their heavy course load in the second semester (which causes them to focus on core subject projects rather than those of the communication’s class). To address the perception of the communications course as an academic hurdle, my role will be to work alongside core instructors to teach the communications format(s) required in the discipline and grade the written component of the submissions; the core instructors will grade content and concept accuracy. We believe this approach will accomplish several goals:

- Introduce students to the required/preferred communications forms in the first semester of studies
- Improve the quality of submissions as the number of assignments will be decreased while the value of each increases (one assignment will affect grades in multiple courses)
- Enable the core instructors to reduce time spent instructing the written formats
- Emphasize the need for excellent communication with primary readers: employers, governing bodies, and clients
- Increase students’ awareness for the need to write effectively as a reflection of professional development and learning

The assumption is the more discipline-specific assignments will encourage the students to attend to writing and communications tasks throughout their semester’s studies rather than in a singular communications course. Structured rubrics will be developed and used for grading. Because there is only one group of students per year, a parallel sample group is not possible; therefore, the base for comparison will be past students’ submissions.

My presentation will discuss the preliminary findings of this approach as a communications instructor teaching cohorts in a specific discipline and encourage discussion on how this integrated approach might be incorporated with other writing across the curriculum initiatives.
**Students as Moviemakers: Applying Animated Video-Based Curriculum in Higher Education**

**Area:** Educational Technology

**Poster Session**

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**Description:** This is a proposal for a future study aims to investigate the importance of supporting the traditional literacy (text) using the new literacies. The study will design and apply a curriculum for an undergraduate/graduate course about using technology in teaching. Then, an action research is planned to compare the results before and after applying it. The researcher focuses on video projects as an efficient method to provide knowledge for digital natives.

**Abstract**

One of the main questions in education has always been how to prepare young learners for their new world. Some studies claim that text is no longer enough for digital natives (Prensky, 2001), who need to explore knowledge beyond the text format. Exploring different types of literacies to support the traditional one (text), visual literacy, and especially videos, have come back to the field but with a different use. Students today are taking the director’s role instead of being merely watchers. Participating in this new trend, this abstract proposes a future study that aims to design a video project-based curriculum for using technology in teaching, where the students are the video makers. The study investigates three main questions:
- How to design a creative curriculum for higher education that integrates content knowledge into an ongoing video making process?
- What is the impact of using traditional literacy (text) and visual literacy (videos) on digital natives?
- What is the impact of using animation on students' learning and engagement?

To answer these questions, three steps should be completed. First, planning and designing a curriculum based on pedagogical and theoretical frameworks. Second, finding additional resources to assist students achieving the goal of this study. One of the tools has already been designed for this purpose is a mobile app named Animdeo. Finally, applying and evaluating the new curriculum on an undergraduate/graduate course at one of the southwest universities in the United States is necessary to move the study from the theoretical stage into learning environments. The main objective of designing and applying such a study is giving students the ability to:

- Demonstrate creativity in conveying messages and teaching contents.
- Evaluate digital tools available and choose the right one(s) for their purposes.
- Make decisions, think critically, and solve problems by organizing data.
- Research, find, and evaluate information whether digitally or printed.

The expected outcomes by the end of this study are:

- Promoting creativity in both teaching and learning.
- Encouraging students to be knowledge providers not merely receivers.
- Using the new literacies to complement the digital natives’ learning and lifestyle.
- Assisting students to be lifelong learners by developing the 21st century skills.
References


Retrospective Reflection in a PLC to Develop Preservice Teachers' Beliefs about Teaching Reading

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Abstract

Preservice teachers are confronted with multiple methods of teaching reading while studying in their teacher education programs. However, often a problem, beginning teachers revert to teaching reading based on the way they learned to read or they adopt the teaching practices of their student teaching mentors. Using retrospective reflection, preservice teachers revisited case studies they had written while teaching a struggling reader in a bi-weekly tutoring experience during a reading methods class. To reflect, participants journaled and then discussed in the format of a Professional Learning Community (PLC). Discussions related to what and how their student learned from them. Participants’ perceptions of how to teach reading were also discussed. Finally, the importance of reflection was discussed. Journals and transcriptions of the PLC discussions were analyzed by two coders using open coding procedures, and pre-post subject-comparison analysis. The researchers’ key focus throughout the study was to understand what the preservice teachers believed about how students learn to read and whether or not retrospective reflection after an applied learning experience changed the initial beliefs they held. Findings suggested that retrospective reflection has the power to change, confirm or deepen beliefs held by preservice teachers regarding how students learn to read and how to teach reading. Preservice teachers also learned the importance of reflection and the importance of differentiating their instruction to meet the needs of their students. Additionally, they gained professional voice and confidence as teachers.
Background for the Study

As a reading educator of preservice elementary and early childhood teachers for the past twelve years, I have continued to question how preservice teachers' belief systems are developed. Do the best practices, that I teach in my reading methods courses, become a part of the preservice teacher’s thinking and transfer to their teaching practices as beginning teachers?

My epistemology has been confirmed in the literature. There are many struggles when working with preservice teachers: the transfer of knowledge and best practices to their teaching (Bean, 1997; Hoffman, et al., 2005; Linek, Sampson, Raine, Klakamp, & Smith, 2006; Maloch, et al., 2003; Thomas & Barksdale-Ladd, 2000); and the difficulty in changing beliefs about how reading should be taught (Costa, 2000, 2008; Hoffman, et al., 2000; Risko et al., 1996).

Additionally, many preservice teachers are struggling readers themselves (Draper, et al., 2000; Lassonde & Blake, 2006; Lesley, et al., 2007); and many adopt the teaching practices they grew up with or the ones they observe from their mentor teachers in their field experiences (Hoffman, et al., 2005; Grisham, 2000; Bean 1997).

Having taught Reading Recovery for six years prior to coming to higher education, I had experience working with struggling readers. That work made me very reflective. Reflection is key in the learning process (Grushka, et al., 2005; Hoffman, et al., 2005; Linek, et al., 2006; Risko, et al., 2008). and preservice teachers need to internalize and develop teaching practices that produce student learning. Teacher educators have been successful in seeing beliefs change through reflective practice (Linek, et al., 2006; Mallette, et al., 2000). And it does not appear to be a matter of how much time (semesters) is spent by preservice teachers using reflective practice. Risko and her colleagues (2008) reviewed over eighty research studies and found that "many of the researchers, whose studies they reviewed, described changes in learning, beliefs,
and teaching within one semester" (p. 281).

The Purpose of the Study

The purpose of this study was to take a closer look at reflection and the developing reading knowledge of preservice teachers. Preservice teachers in elementary and early childhood programs at a Midwestern university simultaneously conducted action research on their own understandings of how students learn and their own understandings about reading pedagogy. Each participant re-examined the case study they wrote on an emergent/early reader during their reading methods class, Individualizing Assessment and Reading, which had an applied learning component. Additionally, they thought about reflection as a way to understand reading knowledge and pedagogy.

Research Questions

1. How does retrospective reflection in a PLC, after using Response to Intervention (RTI) in an applied learning experience, help preservice teachers develop an understanding of how students learn to read and an understanding of how to teach reading?

2. What do preservice teachers believe about how students learn to read and through retrospective reflection, do those beliefs change?

3. What do preservice teachers believe about teaching students to read and through retrospective reflection, do those beliefs change?

The Conceptual Framework

Reflective Practice

Preservice teachers and their transferring of knowledge to teaching practice has been a problem researchers have struggled to understand (Bean, 1997; Hoffman, et al., 2005; Linek, Sampson, Raine, Klakamp, & Smith, 2006; Maloch, et al., 2003; Thomas & Barksdale-Ladd,
But, Mallette and colleagues (2000) found that preservice teachers learned and applied their learning when they participated in field experiences where they made decisions about instruction and interacted with others to build their knowledge and beliefs about literacy. Whether a novice or an expert teacher, reflection is the ingredient that paves the way for future problem solving processes (Ferry & Ross-Gordon, 1998).

Reflection has a long history in American education beginning with the preeminent philosopher of education, John Dewey (1933). Dewey first used the term reflection, and defined it as "an active, persistent and careful consideration of any belief or supposed form of knowledge" (p.9.) Dewey studied reflection involving the interactions between the thoughts and actions of individuals in perceiving and questioning their environment. He claimed active consideration about what one believes or supposes about knowledge and its construction are critical for learning. Learning occurs continually as we experience and inquire about the environment.

Teachers are confronted continually in their classrooms with problem solving tasks when teaching students how to read. Donald Schon (1983) studied how reflective thought occurs when professionals are confronted with problem solving situations. Schon combined Dewey's concept of reflection with the situational context playing a role in the process where decision making occurs. The novice frequently failed to reflect on the problem solving process and therefore, in subsequent encounters did not apply what was learned. Conversely, through reflection, the expert chose among different approaches and developed a plan for the given problem solving situation. Therefore, developing as teachers involves continually reflecting on how and why students are learning in the elementary classroom and examining the beliefs held about learning and teaching. Thus, reflection is at the heart of teacher growth (Bunting, 2007;
Grushka, et al., 2005).

Researchers have tried to encapsulate the process of reflection to understand exactly what it is that makes the developing reading knowledge of preservice teachers transfer to their teaching practice. Risko and colleagues (1996) took their preservice teachers through a reflection process that yielded an understanding of the flexibility good teachers need to have when problem solving with struggling readers and making teaching decisions that are independent of a reading program. The researchers engaged their preservice teachers in reflective experiences that caused their initial “naïve conceptions” (p. 109) about literacy teaching to change. For reflective experiences, preservice teachers watched videos, examined case studies of struggling readers and engaged in small group discussions to develop their reading knowledge and reading pedagogy.

Group discussion that allows the members to hear the perspectives of others has also been found to deepen content knowledge (Brevig, 2006; Hoffman, et al., 2000; Santa, 2006; Bell, 2007), change beliefs (Costa, 2000, 2008; Hoffman, et al., 2000; Risko et al., 1996), develop reflective practice (Costa, 2000, 2008; de Jager, 2005; Hoffman, et al., 2000; Risko, et al., 2002, 2008; Santa, 2006; Bell, 2007; Arredondo & Rucinski, 1994; Campbell & Kmiecik, 2004) and develop pedagogy (Hoffman, et al., 2000; Risko et al., 2002; Clark & Medina, 2000).

Researchers have also found that preservice teachers use their personal experiences and values to guide their reflective work (Risko, Roskos, & Vukelich, 2002). In Risko and colleagues’ study, preservice teachers were aware of how their own perspective helped them remember information and make sense of course content. The researchers saw the power of their students’ personal experiences and the developing nature of reflective practice and noted that, because of reflective practice, the preservice teachers’ showed tendencies to adopt new
strategies as the semester progressed. Further, when developing reading knowledge, reflective discussion helps in learning the content of the text and course (Cantrell, 2002; Lassonde & Blake, 2006).

Placing preservice teachers in problem solving situations and promoting reflection on the process of learning is, therefore, paramount if we expect novice teachers to develop their knowledge and skills for teaching. Retrospective reflection which involves social interaction and exploratory talk, leads to reading knowledge - the framework for thinking about reading pedagogy (Brevig, 2006; McAlpine, Weston, Beauchamp, Wiseman, & Beauchamp, 1999). Reflection also enables mental structures long solidified and deeply rooted to change (Linek, et al., 2006; Mallette, et al., 2000).

**Methodology and Data Collection**

**Participants and Setting**

This study was conducted with four preservice teachers who were former students of the primary researcher, an instructor at an urban Midwestern university. Of the four preservice teachers in the study, two were Early Childhood Education majors, and two were Elementary Education majors. All were white females: two were in their early twenties, one was in her late twenties, and one was a non-traditional student. To avoid bias, all of the participants had completed all of their reading methods courses in the education program, and would not have the researcher again as an instructor or supervisor. A fifth pre-service teacher served as the research assistant and had only completed her first reading course, *Introduction to Reading*. Every effort was made to ensure the participants felt comfortable sharing in the discussions and there were no indicators to the contrary.

This qualitative research study was designed to take a closer look at retrospective
reflection using the participants’ case studies from the course, *Individualizing Assessment and Reading*. While taking the course, preservice teachers tutored emergent/early readers for twelve sessions and used Response to Intervention (RTI) to assess, diagnose, plan, and teach strategies to their tutored emergent/early readers. Students wrote detailed reflections after each lesson. The case studies were presented to their peers at the end of the semester.

**Data Sources and Analysis Procedures**

Participants were given a reflective task to prepare for each of the three PLC meetings. On their own, they individually responded to the task and then for the PLC meeting, the discussion centered around the topic of the reflective task (see Appendix A). Participants kept journals and the PLC discussion sessions were audio-taped. For the analysis, the audio-tapes were transcribed. The transcriptions were analyzed separately by the researcher and research assistant using open coding procedures, and pre-post subject-comparison analysis. The researchers’ key focus throughout the study was to understand what preservice teachers believed about how students learn to read and whether or not retrospective reflection in a PLC changed the beliefs of the preservice teachers? Each of the two researchers coded and analyzed the Individual Retrospective Reflection (journals) and the transcriptions from the oral interviews separately and then collaboratively conducted a cross-comparative analysis of their results. The member checking interview confirmed the findings of the data and served to triangulate the data. For the sake of space, the researchers have included their collaborative analysis of the journal data and the collaborative analysis (Appendix B) of the PLC discussions in this paper.

**Findings**

Two overarching themes about preservice teachers emerged from the data analysis: 1) transformation in beliefs related to how students learn and how to teach reading; and, 2) changes
in confidence about themselves as teachers of reading. Preservice teachers gave their perspectives on student learning and their understanding of how to teach reading from the two retrospective reflection sources: the applied learning experience (case study for class) and the retrospective reflection research study.

All of the preservice teachers felt that the applied learning experience and retrospective reflection (which occurred after each lesson they taught as the case study was written) gave them a knowledge base for working effectively with struggling readers. Through the retrospective reflection research project, preservice teachers made adjustments to their own understandings about how students learn and how to teach them.

All but one of the preservice teachers said that the retrospective reflection research study brought about changes in their beliefs about reading and teaching. Preservice Teacher A commented that her understandings did not change, but were validated and deepened throughout the retrospective reflection research study. The preservice teachers’ views of student learning expanded to include the importance of reflection, and the importance of assessing regularly to differentiate instruction and create lessons that are designed to meet the individual needs of the student.

Retrospective reflection and peer discussion made the preservice teachers more metacognitive by making them aware of what they knew and didn’t know (Blakely & Spence, 1990) about how students learn and how to best teach them. Enabling preservice teachers to talk about what they know and believe in a small group seemed to empower them with greater confidence as beginning teachers. During the discussions preservice teachers confidently voiced their opinions and even at one point challenged each other’s beliefs. By the end of the study, there was a definite shift from how the four students initially approached the idea of being a part
of the research study. Initially, one voiced her fear that she did not know enough to be involved. Another stated that she needed to be involved so that she would learn more about how to teach reading and openly admitted that she had not paid attention in class like she should have. Nevertheless, each participant finished the study more confident about themselves as beginning teachers. They each expressed excitement about teaching reading in their upcoming student teaching experiences and discussed how they hoped to assess students using RTI to ensure that their teaching was modified to meet the needs of their students.

Conclusions

This study confirmed what researchers have found about reflection and its power to change the perspectives or beliefs held by preservice teachers (Linek, et al., 2006; Mallette, et al., 2000; Risko, et al., 2002). Retrospective reflection was influential in changing the beliefs of preservice teachers. Further, because of the retrospective reflection done alone and in the small discussion group, preservice teachers became more confident as beginning teachers (i.e., more sure of what they knew about reading and how students learn, and the role they will play as teachers in helping future students learn to read).

Final Thoughts

The power of reflective discussion for helping preservice teachers develop their knowledge about reading and how to teach it (Arrendondo & Rucinski, 1994; Brevig, 2006; Risko, Roskos, & Vukelich, 2002; Smith, Rook & Smith, 2007) cannot be underestimated. As teacher educators, enabling preservice teachers to expand what they know about reading is paramount if we expect to produce confident teachers who become change catalysts in education.

Having students go back and revisit the case study they created on an emergent/early reader in a course with a field experience proved to be informative for both the preservice
teachers and the primary researcher. As reading educators, it is not only necessary but critical that we ensure our students are prepared for what we know will come.

As teacher educators, we must seek to understand how preservice teachers develop their reading knowledge in ways that it is transferred to their teaching practice. Retrospective reflection in an applied learning experience appears to be the first step to helping preservice teachers understand the complexities of teaching reading. Using retrospective reflection to revisit what preservice teachers believe about how students learn and how to teach (in a PLC) is a follow-up step that hopefully ensures that preservice teachers’ beliefs will be revealed and misconceptions corrected. It is important preservice teachers leave their reading education program and teach research based methods in their classrooms. Therefore, future research on the practices used by beginning teachers should be conducted. Empowering preservice teachers to be confident as beginning teachers is important if we don’t want them to slip back into teaching the way they learned to read or simply follow the teaching methods of the cooperating teacher in their student teaching experience (Hoffman, et al., 2005; Grisham, 2000; Bean 1997).
References


practice in one Australian University teacher education program. Reflective Practice, 6(2), 239-246.


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Appendix A

Directions Given to Participants:

**Session 1:** The research study will be outlined, and your roles as participants given. Data Collection #1 will be done. **INDIVIDUAL RETROSPECTIVE REFLECTIVE ASSIGNMENT:** Write in a journal the answer to this question: How do children learn to read?

**DURING OUR MEETING:** Whole group discussion (audiotaped) as the answer to this question is discussed.

**Session 2:** **INDIVIDUAL RETROSPECTIVE REFLECTIVE ASSIGNMENT:** Analyze your case study and lesson reflections from EDU 360, Individualizing Assessment and Reading. Look for 3 pivotal places where your student learned something new.

Example of Student Learning #1:

- ☐ Describe the need the child had. (your assessment or observation showed.)
- ☐ Describe the intervention you used. (the activity, what you said, etc....anything you can remember about the experience)
- ☐ Describe the student’s response. (reaction to your teaching, or discovery....describe the details)

Example of Student Learning #2:

- ☐ Describe the need the child had. (your assessment or observation showed.)
- ☐ Describe the intervention you used. (the activity, what you said, etc....anything you can remember about the experience)
- ☐ Describe the student’s response. (reaction to your teaching, or discovery....describe the details)
Example of Student Learning #3:

☐ Describe the need the child had. (your assessment or observation showed.)

☐ Describe the intervention you used. (the activity, what you said, etc.....anything you can remember about the experience)

☐ Describe the student’s response. (reaction to your teaching, or discovery....describe the details)

Now go deeper: Answer these 3 questions: In your opinion:

• What was it that caused learning to occur? (give the specific reasons you think the student learned)

• What does this tell you about student learning?

• What does this tell you about teaching?

DURING OUR MEETING: Data collection #2. Whole group discussion (audiotaped) as the answers to these questions are discussed.

Session 3: INDIVIDUAL RETROSPECTIVE REFLECTION ASSIGNMENT: Read the research articles on reflection that you have been given.


Make notes about the following:
STUDENT LEARNING:
Have your ideas about how students learn changed as a result of the applied learning experience? If yes, explain how they have changed.

Have your ideas about how students learn changed as a result of the research project and the retrospective reflection you did about student learning? If yes, explain how they have changed.

THE TEACHING OF READING
Have your ideas about how to teach reading changed as a result of the applied learning experience? If yes, explain how they have changed.

Have your ideas about how to teach reading changed as a result of this research project and the retrospective reflection you did about teaching reading? If yes, explain how they have changed.

DURING OUR MEETING: Data collection #3. Whole group discussion (audiotaped) - as the answers to these questions are discussed.

Session 4: Member checking interview.
Appendix B

**Researchers collaborative analysis - Journal Assignment for Session 1**

How do children learn to read?

**Participant A** believes meaning is the context for which learning to read occurs and students are constructivists of their own learning through building on what they already know (schema). She mentions discussions and writing as ways to deepen one's understanding.

**Participant B** believes children primarily learn through visual but will use meaning to decide if the word fits into a meaningful context. Children use letter-sound relationships to learn how oral language is translated into printed language.

**Participant C** believes a visual (graphophonic) approach is necessary to learning to read and says that learning to read begins before children enter the classroom. She also said that children learn differently and at different rates but believes that all children go through the same reading stages. She did mention that reading should be meaningful, not just the isolation of letter/sounds.

**Participant D** believes that learning to read begins at home when children are read aloud to. Meaning is essential when learning to read and connections from the oral language to symbols to words, and vocabulary to text are important.

**Researchers collaborative analysis - Journal Assignment for Session 2**

Analyze your case study and lesson reflections from EDU 360, Individualizing Assessment and Reading. Look for 3 pivotal places where your student learned something new.

**Participant A** – Student learning occurs in a safe environment. Initial assessment needed with a plan of intervention. Modeling of strategies is essential. Meaning oriented and understands the importance of reflection, planning and differentiating instruction. (Reading Recovery – RTI)
**Participant B** – Student started out using pictures and did not attend to print. Preservice teacher scaffolded the student with decoding – visually oriented in her teaching, however, she did teach rereading to confirm meaning. Student went from reading the pictures to using the words more, but at the end, teacher directed her to meaning to make sure it made sense. This preservice teacher appeared to shift in understanding meaning as primary to teaching reading.

**Participant C** – Used integrated teaching - cross-checking meaning and visual. Student needed chunking and to slow down and pay attention to the words. Also taught rereading to confirm meaning. Emphasized the importance of teaching as asking questions and putting the child in the situation of problem solving to learn. (“Rather than just telling the child the words.”) She also emphasized modeling for students to see and understand what they are to do when reading.

**Researchers collaborative analysis - Journal Assignment for Session 3**

Have your ideas about how students learn changed as a result of 1) the applied learning experience; and, 2) as a result of this research project? If yes, explain how they have changed.

Have your ideas about how to teach reading changed 1) as a result of the applied learning experience (ALE); and 2) as a result of this retrospective reflective research (RRR)? If yes, explain how they have changed.

**Participant A** – Changes:

SL & ALE= The course involved with the applied learning experience “modeled student learning and showed me what to watch for.”

SL & RRR = NO CHANGE – Her opinions and reflections were validated.

TR & ALE = Before the class she didn’t have a “deep idea” about how to teach reading. She now realizes working with one child only gives a glimpse of problems that can be encountered with
struggling readers. (There is more to learn.)

TR & RRR= NO CHANGE – Her opinions of RTI, reflecting, inferring, discussing, and synthesizing were validated.

**Participant B** – Changes:

SL & ALE= Has realized that students can be taught to read; that they are not just born that way. Strategies are what equip the student to learn how to decode.

SL & RRR= Students need to learn the strategies in a meaningful context and use books that are interesting. Moved from believing that students learn visually to the importance of meaning to ensure students are engaged and like reading [which is how she learned to read].

TR & ALE= I learned the strategies. Strategies must be explicitly taught.

TR & RRR= As a teacher, I must always be reflecting and adjusting my teaching in order to help students grow as readers.

**Participant C**- Changes:

SL&ALE= Still maintains students learn at their own pace. Now understands that what works for one, does not work for all. Attributes differences in learning to the construction of knowledge for each individual.

SL & RRR= Through reflecting she now sees that she could have made adjustments to her teaching so that the student would hopefully have progressed further and faster.

TR & ALE= “I have created my own ideas of how to teach students how to read.”

TR & RRR= Realized she should have taught differently to meet the tutored student’s needs.

**Participant D**- Changes:

SL & ALE = link strategies to hands-on meaningful experiences
<table>
<thead>
<tr>
<th>SL &amp; RRR</th>
<th>Importance of students’ reflection on strategies they are learning</th>
</tr>
</thead>
<tbody>
<tr>
<td>TR &amp; ALE</td>
<td>Letters and sounds should not be taught in isolation. Meaningful context</td>
</tr>
<tr>
<td>TR &amp; RRR</td>
<td>Teacher reflection to create lesson plans that meet the actual needs of the students</td>
</tr>
</tbody>
</table>
Abstract

In recent years, Japan has outscored the United States at a statistically significant level on the Organisation for Economic Co-operation and Development’s (OECD) Programme for International Student Assessment (PISA). In the past (2000 and 2003), the United States scores were not statistically significantly different from those of Japan. This descriptive study describes and analyzes Japanese public elementary education in one prefecture in order to better understand practices and related policies that have led to Japan’s success. Data is comprised of classroom observations, elementary public school language teacher interviews, a self-reported survey from 58 schools in four cities across Osaka Prefecture, and newspaper articles. This presentation is limited to two themes that initially emerged from classroom observations—(a) learning environment (physical, mental, and emotional) and (b) classroom procedures. The participants in this report were 10, sample of convenience, elementary public school teachers in grades one, three, and five. Preliminary analysis indicated that the physical environment was sparse, but
mentally stimulating, and emotionally supportive. The environment reinforced
efficient and well-rehearsed procedures, which included opening and closing
routines, students’ oral responses, and readings. As a result, teachers were able to
capture and maintain student attention with briskly paced reading lessons.
Conclusions drawn from this study may be of interest to educators in the United
States.
Title: New Challenge: Transfer from Environmental Design to Art Department: Discussion on How to Balance Design and Art

Topics: Art Education  Reports on Issues Related to Teaching

Presentation Format: Paper Session

Description: After a long tenure in teaching product design for the Faculty of Environmental design I was presented with the challenge of moving my position from Design to an Art Faculty. Teaching Design to Art students represents challenges in a context in which design was never part of its curriculum. These challenges range from revised syllabus to political issues with both students and Faculty members. In this paper I will talk about strategy, case studies and thesis supervision adjustment that result in a successful transition between design and art.

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After a long tenure in teaching product design to the Faculty of Environmental design I was presented with the challenge of moving my position from Design to an Art Faculty. Teaching design to art students represents challenges in a context in which design was never part of its curriculum. These challenges range from revised syllabus to political issues with both students and Faculty members. In this paper I will talk about strategy, case studies and thesis supervision adjustment that result in a successful transition between design and art.

This topic is not new, in fact several colleges and universities in the world are dedicated to teaching art and design in their curriculum; The Ontario College of Art and Design or the Art Center College of Design in Pasadena to name of few. But it remains a constant challenge, how to balance the two disciplines? I intend though in this presentation to focus on the issues raised by my transfer in the hope that it will apply to the general context.

I will introduce the current curriculum of the Department of Art at the University of Calgary, identify the area for improvement. How can we improve design thinking while retaining a true artistic vocabulary? How many design courses do we need to teach to have an impact on artist studio? How to we incorporate modern technology such as 3d scanning, rapid prototyping to Artist?
SUBMISSION # 440

1. Title of Submission: Synergizing Heart/Mind in Leadership: Applying Appreciative Inquiry

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Synergizing Heart/Mind in Leadership: Applying Appreciative Inquiry
Nancy-Angel Doetzel, PhD

Abstract
Emergent scholarly inquiries about synergizing heart and mind within education coincide with post-modernist paradigm shifts towards appreciative inquiry, a constructive mode of research that is a shift from vocabularies of deficit to conversations of possibility. Different from most modes of research, appreciative inquiry promotes transformative dialogue and action by presenting positive questions. Heart wisdom is evident in this form of inquiry when participants begin to feel a sense of hope, excitement, co-operation and ownership about the future. Mind intelligence and heart wisdom should function as an interdependent dynamic; the heart’s latent capacity for universal intelligence and wisdom must, like the mind, be provided with models for its full growth and development. This paper demonstrates how an evolution in thought and research can mean synergizing heart and mind to formulate new of inquiry and knowing.

Introduction to paper
Throughout my investigative research careers within the fields of journalism, education and counselling, I have engaged in an Appreciative Inquiry process that resulted in a freedom to be positive and affirming. Applying an appreciative 4-D Cycle: discovery, dream, design and destiny (Whitney & Trosten-Bloom, 2003) promoted a constructive approach to my personal and professional interactions. Within this 4-D cycle, discovery involves seeking to “understand the best of what is . . . and what has been (p. 7); dream is an energizing exploration of what might be (p. 8); design is . . . statements describing what should be (p. 9); [and, destiny is] a series of inspired actions that support ongoing learning and innovation or what will be” (p. 9).

When employed by a community newspaper and radio and television station, I investigated the good news found within some tragedies; in the counselling profession, I encouraged clients to “act as if” they were already healthy and to find purpose in their
health challenges; and, while engaging in educational research, I asked study participants positive questions. This appreciative inquiry approach to my work has assisted me to mute some “critical, problematic and deficit-based voices” (Whitney & Trosten-Bloom, 2003, p. xi) that tend to cultivate oppression and reductionism within workplaces.

Examining Research

A major finding I discovered in my literature review and data addressing educational leadership was that when educators practise appreciative inquiry they can cultivate spirit within their workplaces (Doetzel, 2006). Spirituality within educational leadership is about connecting with the experience of re-awakening the sacred spark within oneself and others. Establishing discourses about spirituality within educational leadership assists educators to re-discover their heart wisdom, empowering them to view learning through a fresh lens.

Beyond traditional techniques of dispassionate research, an appreciative inquiry mode is a way of illuminating organizational factors that can nurture the human spirit (Cooperrider & Srivastva, 1987). This enlightening approach to research assists organizations to shift appraisal systems from blaming employees to analyzing systems through staff collaboration. By predicting a positive future within workplaces, appreciative inquiry is commonly preferred over research that suggests a repelling tomorrow (Doetzel, 2006). “Appreciation has to do with recognition, with valuing, and with gratitude” (Whitney & Trosten-Bloom, 2003, p. 2). Like elements of hydrogen and oxygen “that combine to make water, the most nurturing substance on earth, appreciation and inquiry combine to produce a vital and powerful, catalytic effect” (p.4). An appreciative inquiry process has been used to enrich spiritual development, heal people’s
wounds, and enhance personal relationships (Whitney & Trosten-Bloom, 2003). Our choices of words within conversations assist in the creation of our reality. Therefore, we should “speak of delight, not dissatisfaction. Speak of hope, not despair. Let [our] . . . words bind up wounds, not cause them” (Whitney & Trosten-Bloom, 2003, p. 60).

Examining the 4D appreciative inquiry cycle: discover, dream, design and destiny ((Whitney & Trosten-Bloom, 2003) within a literature review, assisted me to challenge assumptions that had distorted my views of research (Doetzel, 2006). Within my doctorate study, which addressed personal and professional spiritual development, appreciative inquiry was applied to the research questions: 1. How are the spiritual experiences of educational leaders understood and articulated by educators? 2. In what ways would this articulation of spirituality best contribute to the development of effective leadership? Appreciative inquiry was a constructive approach to my research that created space for new voices and expanded circles of dialogue to include discourses about spirituality. It encouraged the educational leaders participating in the study to establish systems that nurtured educators within their workplaces.

Appreciative Inquiry within action research is an intellectual descendent from the Aristotelean method of inquiry that aims to affect educators’ beliefs and actions. As a process consisting mainly of “sequences of interactions” (Ellis & Bochner, 2000, p.743), this approach to research challenges the hegemony of an established knowledge and power system (Salas & Tillmann, 1998) and focuses on introducing new strategies for educational leadership (Gay & Airasian, 1992). Such strategies encouraged the educational leaders participating in the study to
share personal narratives about spiritual experiences with one’s peers (Doetzel, 2006).

An appreciative inquiry approach to research centres more on discovering the practical effects of a study than developing new theoretical rigour (Gay & Airasian, 1992). “Its purpose is to improve school practices and at the same time to improve those who try to improve the practices: to combine the research processes, habits of thinking, ability to work harmoniously with others and professional spirit” (Best & Kahn, 2003, p. 20). In this form of action research, as applied to leadership studies, the knowledge generated has been referred to as “practical wisdom” (Toulmin, 1997).

Sharing stories within an appreciative inquiry approach to research is a primary step in breaking down stereotypes and connecting theory with humanity. As noted by Vanier (1998),

stories seem to awaken new energies of love; they tell us great truths in simple, personal terms and make us long for light. . . . When we tell stories, we touch hearts. If we talk about theories or speak about ideas, the mind may assimilate them but the heart remains untouched. (p. 90)

To awaken hearts and increase understanding, Jesus told parables, Hasidic Jews and Sufi teachers told tales and Hindus introduced stories.

“Storytelling can provide an opportunity for one to imaginatively engage in dissonant situations thereby increasing one’s capacity to see the world through more than one window” (Shakotko & Walker, 1999, p. 207). In my study, I attempted to understand participants’ truths from an appreciative inquiry standpoint, which is an
approach commonly used in action research (Doetzel, 2006). Schratz and Walker (1998) point out that appreciative inquiry encourages reflection about life experience and story-telling, which are keys to learning. “Being able to speak to ourselves and others about what we experience provides a means of editing and rewriting scripts of everyday life, enables the building of a mental reference system . . . and allows us to build the narratives that give meaning and interest to our lives” (p. 197). Sharing stories is an important means of constructing knowledge and creating teachable moments (Mishler, 1986).

Appreciative inquiry enables participants and researchers to engage in a story-telling process that generates new insights and new knowledge, and creates opportunities for participants to improve their own lives and the lives of their students (Mishler, 1986). For example, in my study participants were encouraged to question what assumptions they took for granted about educational leadership and the effects of them muting discourses about spirituality within the school environment (Doetzel, 2006). As one form of co-operative action research, appreciative inquiry supports a commitment and ability to collapse the division between objectivity and subjectivity (Pyrch, 1998a).

Appreciative inquiry “can be seen as a spiritual imperative” (Reason, 1998, p. 149) that objects to the Western world-view, as “based on a fundamental epistemological error that humans are separate from each other and the natural world” (p. 157). This form of co-operative inquiry is a means to obtain more accurate and more ethical data, because the research is based on people’s experiences and “engaged with people rather than did research on people” (p. 149). Therefore, study participants
are not treated like subjects. This approach to action research is a way of interacting with other individuals who share common concerns and interests; the goal is to make more sense of life, construct new and creative ways of viewing life and “above all to heal the alienation, the split that characterizes modern experience” (Reason, 1998, p. 162). Appreciative inquiry is a holistic approach to research.

**Conducting Research**

Applying Mill’s (2003) approach to inquiry as a guide, the process in my study consisted of the following four steps: 1. identifying spirituality in leadership as the focus; 2. collecting data; 3. analysing and interpreting the data by identifying themes; and 4. developing an action plan. Action research studies provide educators with data that can be used formatively to affect positively an educator’s professional disposition. The action plan that was developed in this study was a schemata suggesting ways educators could apply appreciative inquiry to cultivate spirit within leadership in their workplaces.

As a constructive mode of action research, appreciative inquiry illuminates factors that serve to nourish the human spirit and furnish new alternatives for social action (Ludema, Cooperrider & Barrett, 2001); asking positive questions during this inquiry about spirituality could have ignited transformative dialogue and action within human systems (Doetzel, 2006). For example, study participants may have been motivated to dialogue about and practise spiritual leadership within their workplaces while being actively engaged in cooperative relationships during the data-collection process.

Rather than select an activity related to spirituality that is measurable or interpretable by a researcher, a person may choose to walk or sing as an expression of
their spirituality (Mathews & Clark, 1998). Because only the walker or singer truly knows their intent, an outsider could not be certain whether or not this activity could be viewed as spiritual or non-spiritual. Taking this perspective into consideration, if a researcher attempted to analyse or dissect another’s perceptions of spirituality through a quantitative approach, misunderstandings could occur (Ulich, 1945). “Spirit may erupt at any moment and from any genuine act of creativity” (Fox, 1995, p. 123). Furthermore, telling a divine story that one has been “graced to breathe” (p. 121) could be an epiphany resulting in a true sense of connection with the divine. As stated by O’Murchu (1997), “meaning is embedded in story, not in facts” (p. 199). Research approaches such as appreciative inquiry help deepen an understanding of the spiritual aspect of human existence.

“Appreciative inquiry asks two basic unconditional positive questions” (Ludema, Cooperrider and Barrett, 2001, p. 193). To guide the development of my research questions, I reviewed the “Appreciative Interview Protocol” (p. 193) questions applied to Ludema, Cooperrider and Barrett’s action research inquiry. Their research questions, such as “2. what do you value most about yourself, your work and your organization?” [and] “4. what are the unique aspects of your culture that most positively affect the spirit, vitality and effectiveness or your organization and its work?” appear to be leading. However, appreciative inquiry questions “set the stage for what we later find and discover. The concept of the unconditional positive question assumes that whatever topic we choose to study, we can study it unconditionally, and in so doing, significantly influence the destiny of our organizations” (p. 189).
As suggested by Ludema, Cooperrider and Barrett (2001), I used leading sub-questions with the aim of focusing attention towards affirming matters within the participants’ personal and professional lives: 1. having peak experiences
2. acknowledging spiritual values and moral beliefs that influence effective leadership practices 3. recognizing changes that have added spirit and enthusiasm to their leadership and 4. noting effective leadership practices worth recommending to other leaders.

Within my working definition of spirituality, I stated that the terms “enthusiasm” “excitement” and “spirit” are interconnected with the term “spirituality;” this enabled me to apply these terms within the second set of questions.

Prior to data collection, I used an action research appreciative inquiry approach to developing my research questions (Doetzel, 2006). Drawing from the first key concept, 1. muting discourses about spirituality within educational systems and the second key concept, 2. examining moral issues within educational values, I developed and forwarded the first core question and two sub-research questions to participants:

**First core question**
How are the spiritual experiences of educational leaders understood and articulated by educators?

**Sub-question related to first core question and first key concept**
1. Think of a time when you felt the most excited, most engaged and most alive. What was it about this peak experience that you would define as being spiritual?

**Sub-question related to the first core question and second key concept**
2. What are some of the spiritual values and moral beliefs that influence the effectiveness of your leadership practices?
To answer the above research questions, data were collected on-line by giving participants questions by e-mail (Doetzel, 2006). The feminist, phenomenological and appreciative inquiry approach to the interview involved an interpersonal interaction in which participants were encouraged, by the questions, to share details of their experiences with the researcher. During an on-line interview with the researcher, participants were asked to reflect upon a specific instance, situation, person or event and then to explore the experience. This on-line interview served as a means to establish a relationship with each participant about what the experiences meant them. Throughout the process, the interview was guided by appreciative questions guided by key concepts located within the literature.

For each question, participants were requested to give a one-page (250 word) response within a month (Doetzel, 2006). After participants had answered the first set of questions, the researcher pasted their responses on a web-page and encouraged them to anonymously engage in an on-line discussion for two weeks. To keep the research process active and check out how participants were handling their commitment to the study, I contacted all participants by telephone. After a month, the process for administering and answering the first set of questions was repeated for the second set of sub-questions associated with the third key concept “shifting paradigms affecting educational leadership,” and the second core question. Also, the discussion page was also left open for further discussions.

Related to the third key concept, 3. shifting paradigms affecting educational leadership, I developed and forwarded the second core question and sub-research questions three and four to participants:
Second Core question

In what way would this articulation best contribute to the development of effective leadership?

Two sub-questions related to the second core question and third key concept

3. What are some changes in leadership practices that have added enthusiasm and spirit to your leadership?

4. What effective leadership practices would you recommend to other educational leaders?

As with the first set of questions, participants were interviewed on-line by the researcher before answers to their questions three and four were posted on the web-page for fellow participants to review and respond (Doetzel, 2006). When three weeks had passed, I contacted all participants as a follow-up. After keeping the web-page open for one month, I informed all participants that the data collection had been completed and the web-page would be closed. I thanked them for their rich contributions to the study.

Although e-mail interviews and web-page discussions were the two main sources of data collection, the research design process evolved to include some telephone communication, where I took on the role of facilitator, as suggested by Wadsworth (2001). Being a facilitator involved keeping the dialogue going among the participants and with the researcher. Therefore, I conformed to the needs of the participants, which included discussing the questions by telephone.

Data upheld Park’s (2001) standpoint that representational knowledge involves participants re-describing or re-presenting the object of knowing, which were their peak spiritual experiences. Also, the antecedent event of having a peak experience could lead
to the probable consequences of signifying and cultivating spirituality within the workplace. Experiences associated with “awakening spirituality within self” varied amongst all 10 participants, who presented them within the context of peak spiritual experiences (Doetzel, 2006).

Research Findings

The components of the following schemata (heart graph # 1) were constructed from participants’ responses to sub-question one, “think of a time when you have felt the most excited, most engaged and most alive. What was it was it about this peak experience that you would define as being spiritual (Doetzel, 2006)?” In the appreciative inquiry 4D Cycle, this schemata reflects the elements “discovery” and “dream” that involve searching for the positives of what are and exploring what could be (Whitney & Troten Bloom, 2003). For example, Airjordan and Stider associated awakening and cultivating spirituality with communing with nature; Meiling and Ayla suggested upbeat music helped them to tune into their spirituality, and Newday and Armary indicated that allowing themselves to be childlike cultivated their spirituality. The other four participants associated cultivating spirituality within self with the other components listed in this heart graph. This heart graph is a metaphoric diagram symbolizing a heart-centred model for cultivating spirit within self. The graph also complements the triangulated research design applied to this study (Doetzel, 2006).
Heart graph # 1: Cultivation of spirituality within self

From the findings, a schemata of cultivation of spirit within the workplace was also developed from 10 participants’ shared spiritual experiences as leaders. In the appreciative inquiry 4D Cycle, this schemata reflects “designing” and “destiny.” . . . statements describing “what should be” and “what will be” (Whitney & Trosten-Bloom, 2003, p. 9). The eight components of this schemata include 1. affirming self and others, 2. applying faith, 3. sharing leadership, 4. being accountable, 5. having a clear vision and mission, 6. being true to self, 7. being a positive mentor, and 8. being a continuous learner. These components indicate that leadership models include a heart-centred approach which would place the needs of educators and students ahead of the materialistic concerns of a consumer nation. The components were constructed from participants’ responses to sub-questions three: What are some changes in leadership
practices that have added enthusiasm and spirit to your leadership, and sub-question four: what effective leadership practices would you recommend to other educational leaders (Doetzel, 2006)?

In response to sub-question three, seven participants stated that “affirming self and others” added spirit to their leadership (Doetzel, 2006). Airjordan stated after being affirmed, he felt more confident about taking risks; Beau pointed out the importance of staying positive during challenging times; Luv said that to affirm the worth of her staff, she practises random acts of kindness, such as giving out inspirational cards, flowers, smiles and thank-you notes. She also provides muffins and doughnuts for staff. Meiling and Stider provided the gift of attentive listening; Habs and Newday affirmed themselves and others by practising servant leadership.

Five participants indicated that “applying faith to their leadership practices” added enthusiasm and spirit to their work (Doetzel, 2006). When he is feeling challenged, Airjordan questions what Christ would do in the same situation; Meilling, Newday and Stider said they lean on meditative and prayerful activity to help get them through difficult times at work. For example Newday applies the third step of Alcoholic Anonymous, “Let Go and Let God.”

Four participants suggested that “sharing leadership” added enthusiasm and spirit to their leadership (Doetzel, 2006). Airjordan referred to applying a collaborative effort; Armary suggested giving front-line status to staff; Beau discussed sharing leadership his responsibilities; Luv supported endorsing a synergistic flatter leadership model, inviting input from all stakeholders in the learning community.
Three participants indicated that “increasing their accountability” added enthusiasm and spirit to their leadership (Doetzel, 2006). Ayla used the example of becoming more accountable in the community and province, while progressing towards site-based management; Habs stated that his role has moved beyond manager towards a role of providing inspiration and hope for others; Sara noted that she had become a multi-skilled leader, assuming various roles to help articulate vision and direction for her school.

Two participants associated “having a clear vision and mission” with bringing enthusiasm and spirit into their workplaces (Doetzel, 2006). Armary and Sara stated when organizations have a clear philosophy and articulate the school’s mission, enthusiasm and spirit can flourish in the workplace.

In response to sub-question four, participants noted that being true to self, being a positive mentor, and being a continuous learner were effective leadership practices they would recommend to other leaders (Doetzel, 2006). Stider stated “being true to self” involves sheltering one’s soul with experiences, such as reading, meditating, singing and praying. Similarly, Luv indicated having balance in one’s life and taking good care of oneself is an important precursor to being an effective leader.

To “be a positive mentor” four participants indicated a leader must walk the talk by doing what they say they will do (Doetzel, 2006). For Luv this meant “leading by example;” and, for Sara it was treating others with respect to set a good example.

According to three participants, “continuous learning” is a factor influencing effective leadership (Doetzel, 2006). For example, Luv emphasized that “lifelong learning is not just a catch phrase but an integral part of being an effective teacher-
learner-leader.” Sara indicated that to be accountable, leaders need to retain a knowledge base through reading, networking, life experience and connecting with others.

In association with “shared leadership,” six participants recommended working as a team (Doetzel, 2006). For example, Airjordan stressed the importance of empowering others to share his leadership role rather than being a controller; and Ayla stated that “the more power you give away, the more powerful you are.” Additionally, in association with “affirming self and others,” five participants suggested “believing in self and others” should be incorporated into one’s leadership practices. Airjordan indicated a belief in self and others means taking risks and letting others do the same; according to Sara this belief involves knowing how to motivate staff. Also, affiliated with “affirming self and others” and “shared leadership,” two participants suggested that connecting with others helped them be more effective leaders. Luv stated making time to connect with people is a worthwhile time investment and Sara said connecting with others involves sharing her leadership role. Associated with “having a clear vision and mission,” participants indicated “having clear goals” encourages effective leadership. Airjordan stated that leaders need to set goals related to the school’s vision and mission; Ayla argued effective leadership involves “aligning the heart and mind to work together towards a goal.”

Applying heart-shaped images helps conceptualize a leadership model that aligns heart with mind (Doetzel, 2006). Half of the participants associated their experiences of cultivating spirit within the workplace with functioning with their minds and their hearts. For example, Sara stated that having a heart connection to her mind leads her to be more caring and compassionate towards herself and others. Heart graph # 2 represents a heart-centred approach to cultivating spirit within the educational workplace.
Heart graph #2: Cultivation of spirit within the educational workplace

The foregoing schemata (Heart graph # 2) indicates that leadership models should contain elements of contemplation and action that assist educators to become more spiritually attuned to their hearts while at work (Doetzel, 2006). The schemata also suggests that educators need to bring a spiritual condition into their workplaces by having a clear vision. This schemata places the cultivation of spirituality within the contexts of the interior, exterior, cultural and collective social. It represents participants’ indications that effective leadership practices involve applying mind and heart intelligence to decision making.
Implications

A paradigm shift towards educators seeking a more spiritual approach to leadership is gaining momentum in the twenty-first century (Dallarie, 2001). Many educators have acknowledged that only though a “reconstruction of a spirituality as communal and political can ways be found to reverse the damage of social and economic decline” (p. 34). They are recognizing their innate need to reconnect to the divine spirit, and become more socially active in mentoring moral values (Simington, 2003).

A new epistemology that distinguishes spiritual wisdom from knowledge and associates “conscientization” with morals is emerging (Purpel, 1989). As “paradigm pioneers,” some educators are revisiting “assumptions about the meaning, purpose, and function of education, [to] come to a new awareness” (Ocker, 1999, p.75). This new awareness can guide educators to help students discover their own truths, abilities and skills. Introducing a heart-centred approach to education “will take care of the body, soul, and spirit . . . [and] renew the educational system for the betterment of humanity” (p.76). Such a holistic approach to leadership will result in transitions within educational systems that could encourage a “natural hierarchy” perspective. Administering both a spiritual and scientific perspective to education could create a blend of “wisdom schools and “knowledge factories” within systems designed for learning. This perspective supports a belief that mind intelligence and heart wisdom should function as an interdependent dynamic; the heart’s latent capacity for universal intelligence and wisdom must, like the mind, be provided with models for its full growth and development (Doetzel, 2006).

Renewing educational systems involves replacing former dualistic hierarchical paradigms with a “natural hierarchy” perspective, which is “simply an order of increasing
wholeness, such as particles to atoms to cells to organisms, or letters to words to sentences to paragraphs” (Wilber, 1996, p. 28); it is acknowledging that the “whole is greater than the sum of its parts . . . [which] means the whole is at a higher or deeper level of organization than the parts alone” (p. 28). Although “wholes” are dependent upon parts, segments can exist independently, while lacking the effectiveness of functioning as part of a whole. In educational systems, where leaders practice appreciative inquiry, treat peers with dignity, and share leadership, the effectiveness of functioning as a whole in the workplace would support a natural hierarchy perspective.

Park (2001) suggests that educators need to broaden “the existing epistemological horizons to include . . . representational, relational and reflective knowledge” (p. 82). One sub-type of representational knowledge comprises portrayals of people, events or experiences that predict “antecedent events leading to probable consequences” (p. 82); predictions make it possible to “produce desirable events or to prevent undesirable ones” (p. 82). Another sub-type, interpretive knowledge, is “representational in the sense that we as knowers re-describe or re-present the object of knowing” (p. 83). Relational knowledge is “mind/heart knowledge” (p. 85), which means knowing with the head and heart simultaneously. Reciprocal interaction, such as story telling, conversing or hugging is an integral part of relational knowledge; it constitutes bringing people together and providing opportunities for them to strengthen community by connecting with one another. This interaction would be the design portion of the appreciative inquiry cycle, which involves introducing statements suggesting how an organization should be (Whitney & Trosten-Bloom, 2003).
Conclusion

This paper indicates that an integral part of reflective knowledge is social action, which aims to change the world (Doetzel, 2006; Park, 2001). This knowledge can be gained from the destiny step of the 4D appreciative inquiry cycle that involves inspired actions leading to continuous learning and innovation resulting in organizational changes (Whitney & Trosten-Bloom, 2003). People engaging in political activities can feel empowered and experience changes within themselves that exceed their intellectual comprehension. “Through action, we learn how the world works . . . ; we learn from the mind/heart” (p. 87). Park suggested that by broadening epistemological frameworks to include a triangulated perspective of knowledge, educators can gain competence from representational knowledge, connection from relational knowledge, and confidence from reflective knowledge. Thus, a triangulated perspective of knowledge may empower educators to engage in a holistic process of awakening, signifying, and cultivating spirituality within their workplaces. By cultivating all three forms of knowledge, they may feel liberated to work towards becoming more human and enriching both themselves and their workplaces (Doetzel, 2006). As suggested by Ghandi: we need to be the change we want to see.
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Title of Submission: Auto Ethnographic Research: Know Thyself

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Auto Ethnographic Research: Know Thyself

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Abstract

A major goal of conducting “autoethnographic research” is to assist researchers to better understand the progressive journey of student learning in order to improve their own teaching strategies. This form of self-actualizing inquiry is a type of autographical narrative that explores a researcher’s life experiences. It is currently becoming widely used in the sociology of news media, performance studies, journalism, communication studies, management investigations and novels. In this paper, the researcher will outline how journal entries, newspaper columns, songs and diaries can all contribute to such an inquiry. The goal of the paper is to inspire other scholars to engage in this self-actualizing approach to research. Some life experiences shared within the paper will be examined and analyzed through an appreciative inquiry lens, which encourages the intention of working towards the highest and best in one’s life. The paper will commence with a brief literature review addressing auto-ethnographic research.
Introduction to Study

I acknowledge that no two people exist within the exact same reality, or construct duplicate meanings from their individual life experiences (Doetzel, 2011). Nobody views an event from an identical stand point, or shares a totally common perspective about life. Each of us embraces our own unique reality and versions of truth. What I share from my writings, within an autoethnography, is based on my own remembered reality, and the meanings I have attached to whatever challenges, I faced. I have written a book with a sincere commitment to present insights that I have gained from being a daughter, wife, student, journalist, friend, sister, educator, musician, researcher and cancer survivor. My autoethnography is heart centred and expresses my deepest felt truths. I commenced writing the book, after being diagnosed with cancer and informed that I may only have six months to live.

While on my scholarly journey to obtain my PhD, I apply teachings I received when studying to be a social scientist, therapist and educator (Doetzel, 2003). I examine my life experiences through the lens of appreciative inquiry, which encourages us to observe a glass as being half full, instead of half empty. I incorporate my newspaper columns, songs and journal entries to reveal my life story. Through my writings, I share ways I worked towards honouring my commitment in marriage, forgiving the man who took my brother’s life and applying spiritual insights gained from a childhood new-death experience.

My autoethnography is dedicated to my family and friends who have stood by me during
my fight to beat cancer and my scholarly journey towards obtaining a PhD. An autoethnography is a reflexive account of one's own experiences situated in culture (Fisher, 1986; Pratt, 1992; Russell, 1999). It puts in play a questioning of the positionality and the constitution of the self in autobiography.

Catherine Russell (1999) is convinced that, as literary genres, autobiography and ethnography both have a commitment to actuality, or factuality. She refers to Michael Fischer's (1986) discussion of the writing tactics of autoethnography as 'ethnic autobiography': they are meta-discursive, in that they draw attention to their linguistic and fictive nature. In the context of film and video making, autobiography becomes ethnographic from the moment that the maker understands his or her personal history to be part of larger social formations and historical processes, or, in other words, when the maker no longer understands him- or herself to be a 'self', as isolated ego or as solipsistic experience, but as a 'self' whose experiential self-realization occurs through intersubjectivity and intercorporeality. The self becomes understood as a staging of subjectivity, grounded in intersubjectivity and intercorporeality. In other words, the performativity of the self becomes apparent, not in any simple theatrical sense (which the word 'staging' might seem to suggest), but in the sense of having to be repeatedly performed or played out in distinct contexts, discursively and intercorporeally: a subject in sociality and historicity, not a 'self' in isolation. Subjective identities are irreducible to a single self, and may indeed be in conflict with one another. Thus, Russell argues, autoethnography becomes both a vehicle and a strategy for challenging those forms of identity which are imposed and for exploring discursive possibilities as authentic/inauthentic subjective identities.

Russell (1999) wishes also to include a positive "self-fashioning" within the category of autoethnography, for example in such writing, filming or video recording in which the
ethnographer represents him or herself as a fictional character within the narrative discourse, thereby inscribing a subjective doubleness within the text, whether linguistic, pictorial or visual in character. The imperial eye looking back on itself is also a subject in history and subject to history.

Taking into consideration some of the literature review, I commenced my autobiography with the experience of having been diagnosed with cancer and then shared the experience of surviving a “near death experience” (Doetzel, 2010).

Introduction to Old Heart Child’s Eyes: A Diary of Miracles

Chapter 1: Loving to live (Doetzel 2011)

Oh God, no! A life threatening illness cannot really be happening to me! There are too many experiences yet to be lived, too many songs unwritten, too many photos not taken, too many friends I haven’t met, too many stories untold, too many dances not danced, too much knowledge to be gained, too many students waiting to be taught. I feel like a helpless caterpillar attempting to dodge being trampled on and crushed before spinning a cocoon and ever reaching a full butterfly stage. I am anticipating some kind of divine intervention, to alter my circumstances. I am trying to view my circumstances through child eyes.

I love working as a photographer and reporter for a community newspaper. I am in the commencing stages of completing writing and singing songs for a new CD. I have just finished my university masters thesis and I have been accepted into several doctorate programs. I recently celebrated a major wedding anniversary, on the shores of Lake Superior, with Ken. I am very passionate about life and aspire to live a very long time.

Tears are flooding my face as major clouds burst within my thundering heart. Fragments of my life are flashing before me like lightening casting shadows upon my future. I stair at
photos of my father and brother and I feel a tugging-towards-heaven sensation. I question whether or not I am going take a sudden flight on the wings of God’s angels to join my brother and dad in heaven. Am I being called to return to my Creator, I ask myself? The thought of leaving some loved ones behind in this world, to unite with other loved ones in heaven, feels like a tug of war between two realms.

I scan the photographs on my wall reminding me of my childhood days. Pretending not to know what I knew was often a means of survival for me in a world demanding conformity to a set of norms. When not embracing my authenticity, I felt like I wasn’t being true to my Creator, to my Irish / Aboriginal culture, to my elders and to myself. Now, I am wondering if I can pretend not to know what I’ve just been told about my illness. Can I wash it away, like an ocean wave eradicates footprints in the sand? I question whether or not my nagging passion for living every day to the fullest has been some kind of indicator that my life could be cut shorter than I ever anticipated.

I recall teachings I received about appreciative inquiry. I reflect about the best of what has been and what is. I envision possibilities of the best of what might be. I think about the best of what should be, despite the cancer diagnosis. I apply faith and hope, while envisioning and praying for the best outcome to occur. I foresee myself being healed. This realm of possibility is within me. I believe in miracles.

Disregarding my fear and being courageous means I need to push forward and believe that I am in much larger hands than any doctor’s. I need to accept the best of “what is”. Watching the waves continuously hitting the shores of Lake Superior has a soothing effect on me, after I leave the clinic.

Communing with nature and being passionate about living has kept my spirit nurtured
throughout my life. During my school days, I often strolled through pathways in a forest close to the school, where I admired tall hugging birch trees and ascending rock cuts. In early evenings, I liked to walk to the shores of Lake Superior to savour the fiery orange colours of a sunset. By candlelight at night, I often read adventurous books and Biblical passages, and then wrote reflections in my treasured birch-bark diary.

The writings demonstrate my innate yearning to hold an unconditional positive regard for others. I am being taught by whoever I meet, and am willing to listen to. Within my writings, fact and fiction are bound in kind of a sacred discourse. I wrote intimate letters to my Creator, as a trustworthy friend. My blessings and sorrows are shared in these letters and I often request my Creator’s assistance in discernments. Everywhere I went, I carried a dairy, as if it was attached to my heart with a sacred golden string. It was usually tucked within my purse, beside my wallet. I believed that someday I may revisit my past experiences, through my writings, and perhaps discover a new version of who I am now, and who I was then, and what my truth is. I may come to recognize the “strange in the familiar” and the “general in the particular” when I re-read my reflections written in these dairies.

My printed notes etched in a ragged diary, with the title, “Grade 3 Mean kids,” tug my heart whenever I read my prose about having received “the ugliest kid award” at age 7. It was recess when my peers saw me relaxing beneath a birch tree on the school grounds. They rushed towards me laughing and then handed me a sketch of a skeleton wearing huge glasses and having one eye double the size of the other. (I was very skinny when in grade three and I did wear “coke bottle” type glasses that magnified one eye which I had poor vision in.) But, when I look back, I can recall that there were also other students who were very thin and wore glasses.
I was known in grade three, for having had the highest marks in spelling, English and math. Thus, students had requested my assistance in studying before tests. I recall running home from school, the day I was given the sketch, and weeping endlessly, while in my father’s arms. I asked him why kids were so cruel. He told me that I needed to forgive them, because they really were not aware of how hurtful their actions were. He told me to write a poem about my feelings, in my diary, and then to come watch a humorous television show with him.

Another diary, hidden in a trunk, contains many tear-stained pages with inscribed messages, I wrote during a lengthy hospital stay. At age ten, I was diagnosed with double pneumonia and spent recovery time in an oxygen tent in a hospital during the Christmas season. I coughed continuously and sometimes at night and I would totally lose my ability to breathe. I felt as if someone was strangling me, and when attempting to scream for help, I could not speak. I felt paralyzed and helpless lying in bed in a dingy hospital room, wondering if I would suddenly fall asleep and never wake up again. One evening, I fell into a very deep sleep and then awakened suddenly gasping for air. My lungs seemed to have stopped functioning. I called out to Jesus, and felt as if He was embracing me. Suddenly, a nurse started to pound my back and it seemed as if I was able to breathe again. She mentioned that I had been choking and would need to stay longer in the hospital. I was put into an oxygen tent to enable me to breathe.

On Christmas day, I begged my doctor to allow me to go home for Christmas to be with my family. I stayed up nearly all night long Christmas Eve with my brother and sister and then arose in early morning to open my gifts. During a peak moment of excitement, while ripping open a package containing a warm fuzzy teddy bear, I started to cough and choke and then gasp for air continuously. I could not breathe and my brother and sister yelled that my face was
turning blue, as I desperately gasped for air, and appeared to be passing out. I sensed myself suddenly flying around the room, seemingly to have exited from my body, after I was no longer able to breathe. Then, I acknowledged myself looking down at a lifeless self, lying motionless on our green living room carpet, and holding on to my precious teddy bear. I could clearly see and hear my brother and sister screaming, while my mother was speaking to a doctor on the telephone, and my father was calling out to Jesus, in prayer. I was unable to move or to talk. I could see my dad lifting my limb body from the rug, turning me upside down and pounding on my back. I recall feeling a powerful jolt, as if electricity had struck me, when I heard dad singing “Silent Night.” It seemed as if suddenly I was being called away from the arms of Jesus and beckoned back to a lovingly embrace of my dad hugging me. It appeared as if I had awakened from a very haunting emotional dream.

I was soon rushed back to the hospital and was put in an oxygen tent again. My lungs remained congested for several months and I was unable to return to school. I read books, wrote stories in my diary, and made rag dolls, to pass my time away while hospitalized. There were some suspicions at the time that I may have cystic fibrosis. However, I miraculously healed and returned to school after more than six months of being ill. According to my grade five teacher, I was excelling in my studies, and he suggested that I skip a grade. My memory and ability to focus in class appeared to have greatly improved. Like some kind of rights of passage, I had taken on the look of a mature studious learner. In my school bag, I always carried a sacred diary, which contained some reflections about my illness, about what I had viewed as a dream and about my experiences of returning to school, after spending months in the hospital.

When I lost one of my treasured birch bark diaries while on route to the Holy Land
many years after my lengthy hospital stay, I felt as if a part of my heart had been eradicated. I searched and searched and prayed and prayed. I thought that my sacred book may have fallen from one of my carry on pieces of luggage. Later, while touring sites where Jesus had wept and prayed, I questioned whether or not somebody was reading my diary, filled with self revelations. I encountered moments when I felt naked at the thought of someone entering into my mind and heart through my reflective writings. I wondered whether or not some kind of mystical occurrence had taken place. If so, would my sacred diary suddenly re-appear and miraculously fall into my beckoning hands?

Like a grieving child, I moped around for a few days while continuously searching for my irreplaceable dairy. I telephoned airline representatives to ask them to search for my treasure, as if it contained a monetary fortune. I was despondent when informed that my sacred memoirs probably had been swept up by the cleaners and heaped into a garbage bin before thrown into a dumpster and later burned with other refuse. I wanted to scream at the airlines representatives, to give voice to my writings. But my heart silenced me, with sensitivity towards innocent people just being messengers.

Now was the ideal time for me to start a new page of my diary. It was like experiencing a form of “tabula rasa” (being born with a blank slate) because I felt like my past was being erased and a fresh start was about to commence. An opportunity to let go of some of my painful history was presented. One of my major diaries was gone but so was yesterday. All I had to embrace was the un tarnished moment of the present. I had observed the sun setting on my past and rising on a fresh tomorrow. Again, it would be my choice how I would script my tomorrow, construct my reality and what I would enter into a new diary. What I would come to define as real would become real in its consequences. Perhaps at the right time, in the right
place, my former diary would re-appear. On the back cover of this dairy, my address and phone number had been engraved within a heart sketch. Beneath that information on the back cover was the Serenity Prayer: “God Grant me the Serenity to Accept the Things I cannot Change...the courage to change the things and the wisdom to know the difference.” I am hoping that this prayer will assist in bringing my sacred book back to me someday. I often visualize a needy person clutching my dairy and re-connecting with his/her Creator, the God of his/her understanding.

On the cover of a new diary, I wrote:

*We teach who we are. Our utterances are interpretive and may not represent an absolute truth. Therefore, I aspire to let my life speak. My life mission is to ignite spirit within whomever the Creator puts on my path. I believe that we may be the only book of wisdom that some people read, so we should be cautious about what our actions signify to others. It is by our actions that we indicate whether or not our intentions are genuinely heart centred. We are both spiritual and human beings, but not in a dualistic way, rather embracing two aspects of a single nature. The ways that we synergize our hearts and minds are our choice, and whatever happens to us, we can elect our reciprocation, which becomes our voice* (Doetzel, 2011).

Implications

It is hoped that my writings can assist scholars on a journey towards writing an autoethnography or inspire readers to work towards reaching their full potential selves. Some qualitative researchers (Fisher, 1986; Pratt, 1992; Russell, 1999) have expressed their concerns and support of autoethnography. They note the possibility for autoethnography devolving into narcissism, and suggest that in autoethnography, no matter how personal, the writings should always connect to some other element of life. Throughout my writing, I was reflective of this
concern. Chang (2008) warns autoethnographers of pitfalls they should avoid in their writing: excessive focus on self in isolation from others; 2. overemphasis on narration rather than analysis of culture interpretation; 3 exclusive reliance on personal memory and recalling as a data source 4. negligence of ethical standards regarding others in self-narratives; and 5. Inappropriate application of the label autoethnography. This researcher provided me with some guide posts, for my writing. This “autoethnographic research” aims to assist researchers to better understand the progressive journey of student learning in order to improve their own teaching strategies.

References


Research Objectives

The purpose of this study was to investigate how overlapping communities of practice impacted teacher candidates’ learning. It is based on findings from data collected in the initial year of a longitudinal study examining the impact of transformative pedagogies (Cranton, 2006; Mezirow 1991, 1995, 1997; Mezirow & Associates, 2000) by mentor teachers and teacher educators throughout teacher candidates’ four-year program and their initial year of teaching after graduation. In this phase of the collaborative self-study (2013-14), we were investigating the professional learning of teacher candidates enrolled in an introductory education course that included a lecture and school placement. In the past, links between the community of practice on campus and the communities of practice within the schools were not examined. We were interested in the development of these communities and in the investigation of how they overlapped. This paper examines teacher candidates’ experiences of shifting mindsets and professional identity within these overlapping communities of practice.

Theoretical Framework

Learning has been described as taking place through our engagement in actions and interactions embedded in culture and history (Lave & Wenger, 1991). Such engagement involves “being active participants in the practices of social communities and constructing identities in relation to these communities” (Wenger, 1998, p. 4, italics in original). The perspective of learning as increasing participation in communities of practice is embedded in a relational and situated understanding of knowledge (Lave & Wenger, 1991). This social theory of learning defines communities of practice as “a set of relations among persons, activity, and world, over time and in relation with other tangential and overlapping communities of practice” (p. 98). Here, a community of practice is socially constituted and produces learning, thinking and knowing systems of relations among members. The forming of identities is enabled by and integral to these systems of relations; learning involves the shifting of identities within communities of practice (Chapman, 2008; Handley, Sturdy, Fincham, & Clark, 2006; Lave & Wenger, 1991; Wenger, 1998; Wenger, McDermott, & Snyder, 2002).

Wenger (1998) links the formation of a community of practice and identity with three participatory dimensions: engagement, accountability, and negotiation. Engagement is dependent on developing an understanding of how to interact with other people within the community. Individual identity becomes part of the whole. Becoming accountable to an enterprise, for
example a professional vision, prompts members to consider certain possibilities that contribute to aligned perspectives of the world. Wenger refers to negotiation as the ability to interpret and make use of a repertoire of the community’s practice. According to Wenger, participation in a community of practice is a source of identity. This is where learning takes place.

The framework of our teacher education programming might be best characterized as the pedagogy of place (Gruenewald, 2003): the integration of teacher candidates into their home schools (practice) and the reinforcement of the essential links between the teacher candidates, their peers, and place through targeted course work (theory). Through this integrated process teacher candidates make connections to their schooling through a place-based introductory course. The goal is to have the teacher candidates see the relevance and importance of their studies since those studies have immediate causal effect on their present pedagogical context as professional teachers and, ultimately, the well-being of themselves and their students. In the context of our research, place-based education integrates teacher candidates’ professional community (practice) and targeted course work (theory).

Methodology

Collaborative self-study is closely related to communities of practice as teacher educators engage in a study of their pedagogy. In this research study, we were investigating how we might enhance our practice by explicating overlapping communities of practice. During the past two decades, there has been considerable research involving self-study (Bullough & Pinnegar, 2001; Hamilton, 1998; Kitchen & Russell, 2012; Kosnick, Freese, Samaras, & Beck, 2006; Loughran, 2004; Loughran & Russell, 2002; Tidwell, Heston, & Fitzgerald, 2009). Self-study, a methodology for studying professional practice settings (Pinnegar, 1998), is closely related to communities of practice as teacher candidates engage in attending to patterns in their practices (Kitchen & Ciuffetelli-Parker, 2009). In this research study, we investigated teacher candidates’ experiences of overlapping communities of practice and the process of theory-and-practice integration.

In our existing four-year Bachelor of Education program, teacher candidates in an introductory teacher education course spend one half-day per week in a school placement and three hours a week in an on-campus education lecture. For this year of the project, seventy teacher candidates were placed in cohorts of three to six in sixteen elementary schools. In order to encourage the development of overlapping communities of practice through unfolding and sustained discussions, we divided the course into two-week blocks. Prior to the beginning of each two-week block, teacher candidates were presented with an article to read and an open-ended prompt to respond to in an online discussion forum. The readings and discussion prompts reflected the five areas of competencies in our program: planning for learning, facilitating learning, assessment of learning, classroom environment, and professional responsibilities. In the on-campus class, small groups of critical friends discussed their responses to the prompt with respect to teachers’ roles within school systems. This was followed later in the week by an in-school seminar where six to twelve teacher candidates were invited to reflect on the discussion prompts within the context of their practice. The seminar was scheduled at the beginning or end of the half-day field experience of the first week. At the end of the field experience half-day, teacher candidates were asked to complete journal entries on a range of related topics and critical friends were invited to provide a response to these.

We were fortunate to have two peer tutors available to act as additional critical friends in providing feedback to initial online responses. The two peer tutors were teacher candidates in the
second year of their program and they provided additional questions to inform the in-class discussion in the second week of the block. The on-campus discussion with critical friends in week two provided an opportunity for teacher candidates to discuss their responses to the peer tutors and to the journal entries. Teacher candidates completed journal entries focused on their own roles and responsibilities within the teaching profession following the weekly field experience.

By deliberately integrating on-campus classes and in-school experiences, we hoped to gather data on teacher candidates’ experiences of overlapping communities of practice. Evidence of sixty-one participants’ experiences was documented from class assignments (reflective journal entries, responses to discussion prompts, and a portfolio) and from recorded seminar conversations. After the completion of the course, we conducted individual interviews with a convenience sample of ten participants. Conversations among teacher educators and researcher notes were included in the data.

In this phase of our longitudinal research study, we investigated experiences of teacher candidates’ within overlapping communities of practice. For the purposes of this paper, we have identified emerging themes within the participatory dimensions of engagement, accountability, and negotiation.

**Preliminary Outcomes**

The findings of this collaborative self-study suggest that the place-based course provided significant opportunities for engagement, accountability, and negotiation within overlapping communities of practice. Results indicate that teacher candidates experienced significant shifts in their professional identity as exemplified by one of our participants:

*For me I am a different person when I am in the schools and when I am at school. Like when I am at [the University] and I am in my placement. I am a very different person. I mean when I am at school I am here with my friends and it's school, but you don't have that same mindset. I mean when I am in my placement I am an adult, and I am... You know my mentor teacher even said, "There are two adults in this room that can help you," and I went “Oh me. I am an adult.” So you are a very different person when you are at [the University] and when you are in the schools. And so I think being in the schools for the seminar helped I think put it into that perspective. I became not a... I was... It was coming from the perspective of a teacher. Not the perspective of a [university] student.* (Emily, interview, March 26, 2014)

We conclude that teacher candidates’ abilities to form professional identities very early in their program were enhanced by their engagement in this place-based course.

As teacher educators, this study helped us become more attuned to patterns of participation and provided us with insight into experiences of teacher candidates as they were asked to engage in overlapping communities of practice. The results will enhance the learning experiences of our teacher candidates through a better understanding of our own practice as we design and implement more integrative practicum experiences as part of the third and fourth year of our program. This research links our developing professional knowledge to ways teacher educators can support the formation of communities of practice within teacher education.

**References**


The study examines the effectiveness of a picture fading strategy on immediate, generalization, and maintenance effects of Chinese functional vocabulary learning of adults with severe intellectual disabilities. A multiple baseline across-behaviors design was applied, which was divided into four successive phases: the baseline, the intervention, the generalization, and the maintenance phase. The participants were three Taiwanese adults with severe intellectual disabilities purposely selected by the researcher. The independent variable of this study was a picture fading strategy; the dependent variable was the number of times of correct responses of participants in every assessment of the intervention, generalization, and maintenance phase. The collected data were visualized by line charts, and were analyzed by visual analysis and the C statistic. Based on the findings, the researcher summarized the conclusions as the following:

(1) Picture fading could significantly promote the immediate effects of Chinese functional vocabulary learning of adults with severe intellectual disabilities. Based on the analysis, each participant performed significantly better in the intervention phase than in the baseline phase.

(2) Picture fading is effective in the generalization effects of Chinese functional vocabulary learning of adults with severe intellectual disabilities. Base on the analysis, each participant performed equally in the generalization and intervention phase.

(3) Picture fading is useful in the maintenance effects of Chinese functional vocabulary learning of adults with severe intellectual disability. The participants’ performance declined slightly from the generalization phase to the maintenance phase according to visual analysis, but the decrease was not significant according to the C statistic.
Title:
Excellence, Innovation and Wellness:
A Case Study in Workplace Transformation
Submission ID: 460

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Abstract:

Located at the heart of Canada’s technology hub, the University of Waterloo is consistently ranked as Canada’s top innovative university. Waterloo’s Strategic Plan has a single goal: to be recognized as one of the top innovation universities in the world. Outstanding staff and faculty are, and always will be, at the heart of Waterloo’s success. The ability to recruit, hire, support and retain the best possible employees is critical to our success across all areas. By strategically focusing our efforts on our people, we foster deep institutional pride and the professional growth of our employees as they achieve their full potential at Waterloo.

The process of building a robust employer-employee relationship requires the successful integration of key standards for excellence, innovation and wellness; and the ability to prioritize decisions based on sound data. This commitment at all levels of the university positions Waterloo as an international employer of choice for talented, motivated individuals whose support and engagement will ensure the institution’s continued success.

This interactive workshop will use the Waterloo Story as a case study of how a workplace can be transformed through integrating standards for excellence, innovation and wellness in all university operations, functions and programs; fostering continual improvement and cross-campus collaboration; enabling top performance from all staff and supporting them to achieve their full potential; and becoming a model for employee engagement that is founded on a strong value system.
Voices of Saudi kindergarten children: Views on learning activities and perceptions on gender and learner identity

Nazeeha Khoja

Abstract

This is a qualitative case study that investigated Saudi children’s views of the activities in their kindergarten classroom, and the degree to which the children’s views were reflected in their everyday experiences. The study also inquired into the children’s perceptions of themselves as learners in the classroom setting. The assumption underlying this research is that the practice of listening to and involving children in areas relevant to their lives may have positive influence on how they view themselves and how others view their potential (Clark, & Statham, 2005; Edwards, Gandini, & Forman, 1998). The site of the study was a kindergarten classroom in an urban city in Saudi Arabia. Participants were six children between five- and six-years-old; their participation included taking photographs, discussing their photographs, participating in two drawing tasks, and commenting on their drawings. Three main data sources were utilized including photo-voice, informal interviews and drawings. Children’s comments on their drawings were a secondary source of data.

I looked into the data through the lens of Vygotsky’s sociocultural theory (1978) and Bronfenbrenner’s theory of human development (1979). I analyzed the data using the constant comparative method (Roulston, 2010). Categories of analysis were combined across the data, resulting in nine categories representing the questions posed by the researcher and topics raised by the children. Children’s views revealed the gap between their experiences at school and their interest and experiences outside the school. The data revealed that the participating children preferred open-ended activities and the outdoor environment. The photographs taken by the participants showed the different perspectives through which children experiment and play in
their classroom, and their interest in their social world. Children’s photographs, drawings and interviews demonstrated how children bring their home experiences into school. Moreover, the data revealed children’s assumptions about their learner identity and gender identity, which reflect beliefs held in the Saudi culture. These findings showed that children are capable of participating and sharing their views and ideas even when such practices are not encouraged in their cultural context.

This study may enhance research on cross-cultural perspectives and expand knowledge on participatory visual methods and research with young children. Further, this study can make a significant contribution to the research literature on Saudi Arabian education, which in turn, may have a positive impact on Saudi children’s learning and development. This is especially important because the young Saudi generation comprises close to thirty percent of the country total population (Central Department of Statistics and Information of Saudi Arabia, 2007).
Abstract:

Cybersecurity is an emerging and fast growing academic and technical career field with increasing demands and challenges for higher education and educators. This paper proposes a community based service learning approach to enhance the effectiveness of cybersecurity education. The service learning approach is based on theories in knowledge management and technology acceptance. The proposed model in the paper theorizes that student experience and reflections from service learning activities are important contributing factors to their perceptions on the usefulness of cybersecurity technology and to their motivation to acquire and share knowledge in cybersecurity. The observations and analysis of the findings from a three-year longitudinal study of the service learning projects used for a college level course in the principles of computer information security lend support for the proposed model. The paper also discusses the value and benefits of the service learning approach to the learning goals of cybersecurity-related computing education.

Key Words: Cybersecurity, service learning, knowledge sharing, reflection, ethics
INTRODUCTION

Cybersecurity is an emerging and fast-growing academic and technical career field due to soaring and costly cybercrimes. College programs in Cybersecurity typically prepare graduates for entry-level positions, such as information security analysts. According to the US Department of Labor Bureau of Labor Statistics (BLS), employment of information security analysts is projected to grow 37% from 2012 to 2022, much faster than the average growth rates of 11% for all occupations and 18% for all computer related occupations [1]. There is a national shortage of cybersecurity professionals with the right knowledge and skills, and education is expected to be a major solution for the shortage [2]. Therefore, there are increasing demands and opportunities for cybersecurity education.

Meanwhile, serious challenges exist for cybersecurity education. Cybersecurity is a new area based on the traditional computing profession and requires students to have strong background and preparation in computer and information science and technology to succeed academically and professionally. However, there has been a perpetuated failure of education in the United States to prepare a strong and world-leading workforce in computing professions [3]. Major characteristics of this failure in US undergraduate computing programs include outdated curricula, declining enrollment, and ignoring service learning opportunities that build application skills [4]. The outdated curricula and course content and lack of knowledge application experience may be the leading cause for the gap between the students’ learning and the actual skills needed in the employment market. A recent graduate of Penn State in computer software engineering gives a vivid description of such a gap after his failure to find a
job despite the fact that he graduated at the top of his engineering class: “My college education left me totally unprepared to enter the real workforce. My degree was supposed to make me qualified as a programmer, but by the time I left school, all of the software and programming languages I’d learned had been obsolete for years” [5].

To address the cybersecurity needs and coordinate the national effort on improving cybersecurity education, training, and professional development, the National Initiative for Cybersecurity Education (NICE) was established in the United States. The mission of NICE is “to enhance the overall cybersecurity posture of the United States by accelerating the availability of educational and training resources designed to improve the cyber behavior, skill, and knowledge of every segment of the population -- enabling a safer cyberspace for all” [6]. This mission underscores the importance of both knowledge acquisition and knowledge sharing in the communities of our society for the benefit of everyone’s security in the cyberspace.

To help bridge the gap between college education offering and the job skills needed in the real world and promote knowledge sharing, this paper proposes incorporation of a community based service learning approach in cybersecurity education programs and courses. The proposed service learning approach provides valuable opportunities for students to apply their learning to the real world situations, gain authentic hands-on experience, improve their reflection and critical thinking skills, and share their knowledge with the community and cultivate a strong professional and community ethics that are critical to a successful career. This paper also reports and discusses the author’s experience in using the service learning projects in an online cybersecurity course during the past three years.
SERVICE LEARNING: THEORIES AND MODELS

Service learning is both a practical service and an experiential learning process that involves knowledge sharing and acquisition. Comprehensive analysis of 11 service learning research studies involving over 2,000 undergraduate students suggests that service learning has had statistically significant and positive effects on student learning outcomes [7]. In terms of cybersecurity workforce preparation, human capital and cybersecurity knowledge are the essential factors for achieving technical competence in the general cybersecurity competency model [8]. Knowledge is the contextual and high-value form of information and experience ready to apply to decisions and actions [9]. Knowledge consists of both explicit knowledge or communicable information and tacit knowledge, which is personal and intuitive insights and know-how originated from individual experiences and values [10]. Service learning provides such individual experiences for acquiring and sharing explicit and tacit knowledge. In addition, the theory of reasoned action states that individual perception and attitude are a determining factor of one’s behavioral intention that predicts one’s actual behavior [11]. Prior research results indicate a significant positive correlation between individuals’ cybersecurity knowledge and their intention and attitude toward cybersecurity technology [12, 13]. This paper proposes that service learning experience positively contributes to students’ motivation and success in learning. In other words, students’ service learning experience and knowledge acquisition in cybersecurity improve their perceptions and attitude toward cybersecurity technology, which in turn improves their motivation for learning behavior and success in cybersecurity education.

Service learning brings a number of positive pedagogical effects that enhance learning, among which the most significant ones are: gaining application experience, critical thinking
through reflection, developing professional and community service ethics, and improvement of attitude and motivation for learning. Through hands-on learning-by-doing service learning activities, such as community service projects, internships, practica, and research projects, students have made significant gains in their knowledge and skills and their ability to contribute to the welfare of their communities [14]. Service learning is a process that involves frequent reflection on knowledge and experience that enhances critical thinking and learning. Reflection is a critical thinking activity that demonstrates one’s abilities and skills in connecting experience, observation, theories, reasoning, and learning objectives. In service learning, reflection activities, such as written or oral reports and presentations, encourage and enable students to explore, discover, and evaluate relationships between the course content learned from readings, lectures, and discussions, and their real experiences from doing the service learning work for the community [15]. Service learning also contributes to the development of students’ professional and community service ethics. Through service learning experience, students learn to serve the community with pride and ethical behavior, increase their recognition of civic responsibilities and social justice, and develop a life-long habit of community service and civic involvement [14, 16, 17]. Students’ successful service learning project experience could lead to their higher perceived usefulness of the course content and materials and better attitude and intention to accept and use the course materials [18]. Prior research also indicates that service learning that integrates academic content and community service improves students’ academic interest and their attitude and motivation for learning, which leads to improved student engagement and retention [4, 19].
Service learning may occur in various forms based on different models. Heffernan (2001) identifies and describes six models for service learning [20]. Table 1 below summarizes the six models and student role and the stated benefit for each model. These models are primarily reflecting the types of service learning activities and emphasizing the perspective of the curricular design while ignoring the specific knowledge and skill objectives for student learning. The models are generic and not specifically designed for a certain discipline.

Table 1: Heffernan’s Service Learning (SL) Models

<table>
<thead>
<tr>
<th>Model</th>
<th>Student Role</th>
<th>Benefit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Discipline-based SL Model</td>
<td>Regular presence in the community and reflection on course content</td>
<td>Improve understanding of theoretical concepts</td>
</tr>
<tr>
<td>Problem-based SL Model</td>
<td>Serve as “consultants” on specific community problem or need</td>
<td>Alleviate logistic difficulties for regular weekly commitments</td>
</tr>
<tr>
<td>Capstone Course Model</td>
<td>Apply previous course work to relevant service work in the community</td>
<td>Help students transition from theory to practice</td>
</tr>
<tr>
<td>Service Internship Model</td>
<td>Work 10-20 hours a week in the community with faculty guidance</td>
<td>Develop skills while seeing contribution to the community</td>
</tr>
<tr>
<td>Community-based Action Research Model</td>
<td>Work with faculty to learn research methods while serving as advocate for the community</td>
<td>Most effective for small classes and groups of students</td>
</tr>
<tr>
<td>Directed Study Additional/ Extra Credit Model</td>
<td>Work with an instructor to complete additional work or more in-depth work on a subject for additional credit</td>
<td>Good choice for self-directed and motivated students</td>
</tr>
</tbody>
</table>
Nejmeh (2012) offers a more fine-grained three-dimensional model, which includes project types, activity range, and project mode for service learning [21]. Compared with Heffernan’s models, Nejmeh’s three-dimensional model provides more specific categories of service learning activities with expected focus and skills. It is also practically more relevant to service learning in computing and cybersecurity education as the descriptions and examples are specifically based on computer and information science disciplines and sub-disciplines. Table 2 below summarizes the three dimensions of this model.

Table 2: Nejmeh’s Three-dimensional Service-learning Model

<table>
<thead>
<tr>
<th>Project Type</th>
<th>Activity Range</th>
<th>Project Mode</th>
</tr>
</thead>
<tbody>
<tr>
<td>Training</td>
<td>Research (problem identification and concept definition)</td>
<td>Cocurricular (community service completed outside classroom; either university-based or nonuniversity-based)</td>
</tr>
<tr>
<td>Professional Services</td>
<td>Analysis (requirements discovery, documentation, process/system validation)</td>
<td></td>
</tr>
<tr>
<td>System Selection</td>
<td>Design (architecture and design of database, user interface, communications, workflow, report, and solution strategy)</td>
<td></td>
</tr>
<tr>
<td>Support/Help Desk</td>
<td>Implementation (system implementation with details)</td>
<td>Curricular (project completed in the context of a college course – common project course, subdiscipline-specific project course, or an interdisciplinary course)</td>
</tr>
<tr>
<td>Custom Development</td>
<td>Test (system integration, testing user acceptance, and validation of solution effectiveness)</td>
<td>Hybrid (cooperative style of completing a project involving both a cocurricular component and a curricular or course-based component)</td>
</tr>
<tr>
<td>Product Development</td>
<td>Transition (system installation and migration and delivery of tested system)</td>
<td></td>
</tr>
<tr>
<td>(develop common product applications)</td>
<td>Assessment (assessing system or service performance, efficiency, effectiveness, and value/impact)</td>
<td></td>
</tr>
</tbody>
</table>
METHODOLOGY

The study in this paper is based on a longitudinal study using a community based service learning project assignment in a college level cybersecurity course. The study period is 3 years from the fall 2011 semester to the summer 2014 semester. The service learning project assignment is weighted as 10% in the student course grade. The project design includes the following topics related to the course content: training/tutoring (sharing cybersecurity knowledge and/or skills), professional services (providing expert advice on a cybersecurity issue related to the course content), system selection (identifying cybersecurity needs and recommending solutions), and support/help desk (providing technical support and troubleshooting on cybersecurity topics). The expected activities involved in the service learning project include research, analysis, testing, transition (installation), and assessment of cybersecurity issues and solutions. The project mode is curricular as it is primarily based on the cybersecurity knowledge, concepts, and skills in the course content.

The cybersecurity course for the service learning project in this study is delivered online using Blackboard. Detailed instructions for the project are posted in Blackboard. The service learning project instructions below give students detailed expectations and guidance on completion on delivery:

Project 4 – Part II: Service Learning (10 points)

Objectives: To conduct Service Learning on important cybersecurity topics covered in this course to demonstrate your knowledge and skills on certain information security topics learned from this course. The project also develops community service ethics.

1. Train or tutor a person in the community (e.g. a member or members in your family, church, or at work; or a business you know) in at least three topics of information security covered in this course. Examples of the training topics include information security risks (such as viruses, worms,
spyware, phishing, intrusions, etc.), preventive and protective solutions, risk analysis, and relevant legal and ethical issues covered in this course.

2. The student will then spend about 5-10 hours (including preparation, training activities, communicating with the trainee, and writing the project report) working with the trainee to improve his or her knowledge and skills in the topics.

3. Report your service learning experience in a numbered list or table format in the Word answer file. The report should include the following elements: trainee information/name, the three topic areas covered (each topic must be defined clearly using sources in this course), time spent, training activities, accomplishment (progress made), comments from the trainee, and your own reflection on the experience, what you have learned, and areas for future improvement.

4. Submit the completed Project 4 file at Blackboard by the due date.

**Alternatives:** Instead of training or tutoring, you may also choose to perform one or more volunteer community services for an individual, or a non-profit organization, or a business with permission from the owner or management. The volunteer services should be related to information security topics covered in this course. Examples of such services include:

-- Perform installation and configuration of information security software (e.g. anti-virus, firewall, security scanning, etc.)
-- Perform risk analysis of information security vulnerabilities, threats, and risks
-- Advise on protection strategies for computer and information systems or sensitive data
-- Evaluate and recommend information security software solutions and products

If you choose volunteer service, just complete and submit the report (see item #3 above) in a list format and substitute training with the volunteer service(s) and the trainee with the recipient of your service. Also include a letter or note from the recipient of your service to confirm your service experience.

You may team up with another student in the class on this project. Please submit your work individually if you work on a team.

While the service learning project is of curricular mode and is related to the cybersecurity course topics, the service learning design and instructions give student abundant freedom to choose and pursue their specific topics of interest. In addition, students are expected to communicate with the instructor for guidance whenever they have questions on the project. Students’ completed project reports are submitted electronically at Blackboard course site. Step-by-step instructions were given to students on how to submit their work and verify their submissions. The instructor grading and feedback for the project submissions are also posted in Blackboard for secured individual student access. The following section presents the data, findings, and discussions from the study.
FINDINGS AND DISCUSSIONS

The data collection for this study is based on the curricular service learning project used in an online cybersecurity credit course (CIT181) from fall 2011 to summer 2014. The total subject population is 268 registered students from 10 sections of the course in the past three years who participated in the service learning project. Table 3 below summarizes the data on the project type and activity range of the service learning reports submitted by the students. The Category column shows the specific project type and the activity range of student submissions. The Total column shows the total count of each category, and the Percentage column shows the percentage of each category relative to the total subject population (268).

Table 3: Summary of Data on Project Type and Activity Range

<table>
<thead>
<tr>
<th>Project Type</th>
<th>Category</th>
<th>Total</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Training/tutoring (sharing cybersecurity knowledge and/or skills, such as on various cybersecurity risks)</td>
<td>183</td>
<td>68.28%</td>
<td></td>
</tr>
<tr>
<td>Professional services (providing expert advice on a cybersecurity issue related to the course content)</td>
<td>21</td>
<td>7.84%</td>
<td></td>
</tr>
<tr>
<td>System selection (identifying cybersecurity needs and recommending solutions)</td>
<td>17</td>
<td>6.34%</td>
<td></td>
</tr>
<tr>
<td>Support (providing technical support and troubleshooting on cybersecurity topics)</td>
<td>47</td>
<td>17.54%</td>
<td></td>
</tr>
<tr>
<td>Research (problem identification and concept definition)</td>
<td>58</td>
<td>21.64%</td>
<td></td>
</tr>
<tr>
<td>Analysis (requirements discovery, documentation, process/system validation)</td>
<td>76</td>
<td>28.36%</td>
<td></td>
</tr>
<tr>
<td>Test (system integration, testing user acceptance, and validation of solution effectiveness)</td>
<td>49</td>
<td>18.28%</td>
<td></td>
</tr>
<tr>
<td>Transition (system installation and migration and delivery of tested system)</td>
<td>44</td>
<td>16.42%</td>
<td></td>
</tr>
<tr>
<td>Assessment (assessing system or service performance, efficiency, effectiveness, and value/impact)</td>
<td>41</td>
<td>15.30%</td>
<td></td>
</tr>
</tbody>
</table>
The data in Table 3 above shows a variety of project types and a wide range of activities, which involve heavy hands-on experience of applying the knowledge and skills from the course to real world situations in the community. The project types include training/tutoring, professional service, recommendation on system selection, and technical support and troubleshooting on various cybersecurity topics covered in the course. The service activity range includes research, analysis, system testing, system installation, and performance assessment. Students performing the training or service as well as the trainees and recipients of the student service have reported remarkable experiences of progress and achievement in conducting hands-on activities on important cybersecurity issues, such as research, selection, installation, and assessment on anti-virus and firewall protection solutions and products to secure valuable personal computers and data.

The hands-on application experience from the service learning has contributed significantly to students’ success and enjoyment in learning. Over 93% of the student participants in the service learning project have reported an enjoyable and worthwhile experience of using their knowledge and skills, sharing their knowledge with the community, and learning something new on the cybersecurity topics for their project. The longitudinal assessment results also support students’ improvement in learning through the service learning project. The course success rate among the student participants of the service learning project in the 3-year study period is over 96%, which is 12% higher than the average success rate among the students in this course without the service learning project during the previous 3 years.
The service learning project experience has also developed students’ reflection habit and critical thinking skills, which are essential to their success in learning. Critical reflection is a fundamental component of all service learning experiences and pedagogy, which is especially important for STEM disciplines to assess and critique the community’s technology needs and the impact of service learning projects [22]. All the reports submitted for the service learning projects include a section of reflection and comments on the experience. For example, many students were surprised that the people they worked with had no idea about basic computer protection knowledge and skills. Most students have also reported that they realized that they need to learn more about a certain topic to do better on the service, such as analyzing computer data communications using a network analyzer.

The service learning project has also developed and improved students’ professional and community service ethics. Ethical behavior is especially important for information systems professionals as sensitive systems and information are often at stake [23]. Ethical behavior with a strong sense of responsibility and care for the well-being of others in the community is even more important for information systems security issues. Students have reported discovery of the importance of legal and ethical rules and guidelines for cybersecurity professionals, such as HIPPA for dealing with private health information in digital format. The majority of the students have reported great pleasure and pride in helping others in the community through the service learning project. The majority of the trainees and recipients of the service have reported positive behavior of the students, including being “responsible,” “professional,” “caring,” “knowledgeable,” “helpful,” and “patient”.
Another important reward for the service learning students is the improvement in their attitude and motivation for learning, which will have a long-term positive effect on their future education and career. Many students have reported that the service learning project is such an enriching and rewarding learning experience that they found the information security course content very useful and interesting and would love to pursue further education and a future career in this field. The increased interest and motivation for learning may be attributed to the actual hands-on learning, service ethics, and reinforcement from the community as a result of the service learning experience.

CONCLUSION

The curricular service learning project used in this 3-year study has improved students’ overall academic success as well as their reflection and critical thinking, professional and community service ethics, and attitude and motivation for knowledge sharing and learning. There are also two areas for improvement in the future. First of all, given the success of the service learning project, more course work and weight in grading could be devoted to service learning to maximize students’ learning through service. Also, there was little team work and collaboration with other students on the service learning project due to the challenge of the online course which is difficult for geographically scattered students to work together on service learning projects that require frequent physical presence together. This is a lesson learned. A potential solution is to design virtual service learning projects where students could perform service components individually in distributed locations while collaborating online in research, analysis, discussions, and assessment.
References:


Title: The development of oracy in students with English as an Additional Language through music.

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Abstract

Speaking and listening are the foundation of oracy, and our ability to successfully and meaningfully communicate and express ourselves is primarily dominated through the interplay between these two skills. Proficiency in verbally communicating in the English language can be considered as “a passport to global citizenship” (O’Neill & Gish, 2008, p. 2). Due to increased international mobility, English is recognised as a universal language in which effective communication skills in the language are of paramount importance across cultures today (O’Neill & Gish, 2008). Consequently, it is necessary for these students to develop their oral language skills to fully participate in everyday communicative contexts, and become an active citizen within society.

Connections surrounding the active engagement with music and cognitive neural plasticity have been identified by researchers due to the recent advances in neuroscience, in which such engagement evidence positive influences in language and speech functions. In society today and across all cultures, the components that make
up children’s daily lives are infused with music and musical experiences – social interactions and relationships, behaviour, home routines, and even play (Fox, 2000). Consequently, this exposure to musical experiences and the neurological similarities to oral language suggest that educator’s need to identify multiple strategies and programs for music involvement in classroom.

The purpose of this study is to identify the development of oral language in students with English as an additional language through music. Principles of structural cognitive modifiability within a mediated learning experience (MLE) has been created, implemented, and analysed so as to determine the extent to which music can assist in the development of oracy in EAL students. This study employed a single-subject experimental design (SSED) using a multiple baselines approach. SSED aims to help people in everyday contexts by providing practitioners with a means to individually evaluate evidence-based interventions and how they affect the performance and/or behaviour of each participant at an individual level (Burgard, Foster, Krasy & Radel, 2011).

The intervention implemented centred on the principles of audiation outlined in Gordon’s Music Learning Theory, and techniques used to gather data included: questionnaires, observations and anecdotal notes, semi-structured interviews, collection of official documents, and voice and video recordings. A mixed-methods approach to data analysis was used to evaluate students’ performance in oracy as a result of the music intervention. Qualitative data was thematically analysed using the electronic software NVivo to identify emerging themes and patterns in regards to the verbal fluency and prosody of students’ verbal output. Quantitative data was analysed for mazing behaviour using the computer software program Systematic Analysis of Language Transcripts (SALT-NZ). In addition, rating scales were used to evaluate progress in students’ prosody as a result of the music intervention. Both types of data were triangulated so as to support or refute outcomes of the research.
Comparison of Graduate Learning Experiences in Online Discussions and Face-to-Face Discussions

By Janue Johnson

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October 21, 14
Abstract

The Internet and the rapid changes in technology have introduced a non-traditional learning format. This qualitative study used a phenomenological approach to understand whether the utilization of recent technologies impacted graduate student learning. The research questions explored the experiences of the graduate students and the role of discussions on their individual inquiry process. Graduate students from both, online and face-to-face, courses were interviewed. The study used coding techniques to sort the data and identify emergent themes that described the shared experiences of the participants using technology. Among the emergent themes, a majority of the students indicated that they preferred a traditional face-to-face format for learning.
Transforming the Field of Special Education Through the Redesign of the Pre-service Teacher Early Clinical Experience

Susan D. Johnson
Mercyhurst University
Erie, PA
June, 2014
Teacher education programs are under fire for their perceived inability to prepare quality teachers for teaching and nurturing diverse 21st Century students. The field of special education is particularly sensitive to the effects of this scrutiny. The importance of special education teachers to be well-trained, competent, and collaborative has long been recognized in the literature as vitally important for subsequent student success and progress (Oliver & Reschly, 2010). This need is compounded by the critical shortages of highly qualified special education teachers across the nation, especially in urban and rural areas (Johnson, Humphrey, & Allred, 2009) and for those students with the most significant needs (Cancio, Albrecht, & Johns, 2013).

To further influence the black eye that surrounds the field of teaching in the United States, special education, in particular, is plagued by high rates of attrition. 13.2% of special education teachers leave their positions each year (Plash & Piotrowski, 2006) and a staggering 50% of teachers leave the field by their fifth year of teaching (Johnson, 2004). There is considerable evidence that the first year of a special education teacher’s career is a critical time period and researchers are investigating ways to engage and support new teachers, including mentoring programs during the first year of employment in hopes of decreasing teacher attrition (Marshal, et al., 2013).

A study conducted by Brownell, Smith, McNellis, and Lenk (1994) investigated contextual variables related to teacher attrition and findings indicate that those who were committed to teaching individuals with disabilities stayed in the field longer. Additionally, those individuals who chose to stay in the field had higher self-efficacy, felt more prepared to teach because of their pre-service training, and exhibited more effective coping strategies than those who chose to leave. It is the pre-service training variable that could
be effected through direct instruction, and one, that could perhaps subsequently positively influence the other two variables: pre-service special education teacher’s levels of self-efficacy and ability to cope in various situations.

Trends in learning to teach: from isolation to inclusion

Although the field of special education has varied in its service delivery over the last century, at least one thing has remained consistent; special educators are expected to be trained to meet the unique needs of each individual student, and pedagogy has always been at the heart of special education (“The Council for Exceptional Children’s Position on Special Education Teacher Evaluation,” 2013). Pioneer programs, such as those of Gallaudet, Itard, and Seguin, prepared early special education teachers to instruct in highly restrictive and isolated settings, including institutions (Connor, 1976). Special education teachers were trained using a categorical approach to instruction and learned to teach to specific disabilities (Brownell, Sindelar, Kiely, & Danielson, 2010). During this time period, this included students who were mentally retarded, deaf, or those with speech and/or hearing impairments.

Compulsory education and advocacy endeavors for students with disabilities began to emerge in the 1960s and 1970s, with the passage of several landmark public laws, and special education teacher preparation programs consequently experienced a significant surge in numbers and interest. These teacher-training programs continued to focus on categorical conceptualization of disability and special education teachers were trained to instruct in self-contained settings. This categorical orientation in the 1970s eventually gave way to a non-categorical approach to instruction in the 1980s when severity of disability was evaluated instead of the disability itself.
The inclusion movement of the 1990s altered the role of the special educator and knowledge and utilization of operative collaboration strategies moved to the forefront of pre-service teacher programming. Instead of children with disabilities being secluded in separate buildings for their school day, integration and mainstreaming of these students occurred in regular education buildings. With this inclusive, collaborative approach, pre-service general education and special education preparation programs acknowledged the need for the two disciplines to be prepared together.

As a result of several large-scale studies funded by the Association of American Colleges of Teacher Education (AACTE) and the International Reading Association (IRA), a strong conceptual and empirical basis for vital program components of teacher training in general education has materialized, yet the research on special education teacher training is essentially nonexistent (Brownell, 2005). Valli and Rennert-Ariev (2000) published a review of nine national reform reports that targeted teacher education. Results indicate that, for both regular education and special education teacher training, there is a strong consensus for the use of authentic (field-based) pedagogy with a clear need for pre-service special education teachers to have clinical skills that can be explicitly implemented across a variety of instructional settings and with a diverse population of students.

The field of special education is once again evolving. The Individuals with Disabilities Education Act (IDEA, 2004) mandated that children with disabilities be educated in the least restrictive environment appropriate to meet their individual learning needs and that students with disabilities have access to the general education curriculum. The No Child Left Behind (NCLB, 2002) mandate calls for schools to be accountable for the performance of students with disabilities on assessments aligned to the general education
curriculum. Additionally, special education teachers are to be highly qualified in the core content areas in which they teach.

Since the passage of IDEA 2004 and No Child Left Behind, the fundamental aim of special education teacher training programs has been in instructing pre-service special education teachers to implement evidenced-based practices. The emphasis of NCLB on access to the general education curriculum for students with disabilities and on teachers who are highly qualified has left us wondering about the how of instruction. Specifically, what is the best mode for training students at the pre-service level to implement evidence-based techniques with confidence and fidelity?

Despite the need for the special educator to be inventive and adaptable in their craft, many university pre-service programs have held onto traditional methods of pre-service training that suggest the status quo and not necessarily those practices steeped in evidence of efficacy (Newton, Kennedy, Wilther-Thomas, & Cornett, 2012). Those responsible for the recruitment and preparation of special education teachers raise the question: How can we recruit and train special education teachers who will stay committed to the field and who are resilient in their quest to provide high quality instruction to students with disabilities? One possible solution may come in the redesign of pre-service special education teacher’s early clinical field experiences and the role of university faculty who are responsible for their supervision in the field.

**Existing trends within field experience placements**

It could be assumed that if teaching is a profession of practice, then practice should be at the core of teacher preparation. It is well established in the literature that expertise in any field is obtained through content knowledge mastery, in addition to the chance to
integrate that knowledge in real-life problem solving opportunities. However, it is
generally not until a pre-service teacher gets to their capstone clinical or student teaching
experience that they get to practice teaching. Many states require that students have some
early field experience prior to student teaching and so most teacher preparation programs
in the United States include early field experiences for pre-service teachers (Watson, Miller,
& Patty, 2011). Analysis of these early field experience requirements indicates, however,
that students are rarely exposed to robust experiences early in their educational careers.
Field experiences that occur early in a student’s pre-student teaching preparation program
frequently involve some level of observation of school-aged students and their teachers.
Other early learning opportunities include things like tutoring, assisting teachers or
observing school events. Many question the efficacy of such programming in truly
preparing pre-service special education teachers for work in the classroom.

The literature supports the idea of early field experiences as a litmus test to the pre-
service teacher’s consideration of teaching as a career. It allows for enlightenment of their
beliefs about teaching and may be a solution to the problem of attrition of newly hired
teachers. Pre-service special education teachers who lack quality early field experiences
tend to have significantly more issues adjusting to their role during student teaching and,
subsequently decide to either drop out of the teaching field completely or go onto graduate
but opt not to teach (Watson et al., 2011). Significant amounts of time and money could
have been saved had they been exposed to the challenges within the field earlier and had
the opportunity to choose another career path instead.

Recognizing that traditional field experiences approaches are failing to prepare pre-
service special education teachers to teach in, and across, diverse classrooms, some
university faculty are leaving the college campus classroom and are entering the field with their students (Pruslow & Owl, 2012) while others are utilizing modeling techniques (Evans, Williams, King, & Metcalf, 2010). This research has been limited to case study analysis within the university classroom, not actually administered with a student with disabilities in a classroom setting.

Some researchers have used graduate students to train undergraduates in the use of instructional methodology (Tryon & Schwartz, 2012) in hopes of pedagogy-specific transmission. This spin on supervised experiences is coined “expert coaching”. The authors, however, discuss the limitations of utilizing such an approach and note the extensive training component for both pre-service teachers and graduate students that make such a program work with fidelity.

Other approaches to learning during the pre-service special education teacher field experience have involved peer coaching, modeling ongoing self-reflection about field experiences, and traditional methods of essay and journal writing. The components and procedures of these practices are not well articulated and their effect on pre-service special education teacher's learning is unknown.

**Practice makes permanent: The how of instructing pre-service special educators**

It has been suggested that significant time in the field prior to graduation may serve to bridge the gap between theory learned in coursework and the actual practice of teaching (Zeichner, 2010), although simply adding more time in the field is insufficient for these purposes. It is apparent that something prescriptive needs to happen within the early special education field experience that allows the pre-service teacher to gain meaningful knowledge about the art and science of teaching. There is evidence that some special
education programs share features with programs considered exemplary in general education but it is becoming exceedingly clear that there are unique features that differentiate training in special education from that in general education.

Carefully designed coursework accompanied by structured field experiences allow pre-service special education teachers to gain knowledge in content area while simultaneously applying what they have learned in a classroom. Content area research supports the finding that when specific teaching strategies are taught through coursework and then are implemented in carefully structured field experiences, both general and special education pre-service teachers enhance their knowledge of, assurance in, and use of inclusive and evidence-based practices in the classroom (Leko, Brownell, Sindelar, & Murphy, 2012).

Working alongside university faculty who are coaching the pre-service special education teacher on distinguishing between, and subsequently implementing, evidence-based practices to identified students with disabilities could be the vehicle needed for pre-service special education teachers awareness and mastery of the teaching skills themselves. Hanline (2010) specifically posits that it is the pre-service teacher’s recognition of different instructional approaches that influences student learning, especially when the pre-service teacher can work 1:1 with a student. Hanline also reports that pre-service teachers indicate that their practical experiences are what allow them to connect content to pedagogy and to view best practices in real-life settings.

Cochran-Smith and Lytle (1999) suggest that effective teachers are capable of implementing various types of knowledge throughout their instruction. Pre-service teachers should, therefore, engage in these types of knowledge through their coursework,
field experiences, mentoring, and practical application. They posit that teacher knowledge can be categorized into three specific areas: (a) knowledge-for-practice; (b) knowledge-in-practice; and, (c) knowledge-of-practice. The authors describe knowledge-for-practice as the specific content knowledge of teaching, with the focus on content and pedagogy. Pre-service teachers typically gain this knowledge through coursework.

Knowledge-in-practice is the knowledge of teaching that comes from the experiences you gain while engaging in the practice. This includes information acquired while in field experiences. Knowledge-of-practice is seen in those who disseminate information, understanding and findings about their craft to others in order to further the profession.

Given that university students are beginning to request that professors are not only experts in their fields, but also are able to coach them in their learning process (Harden & Crosby, 2000), it seems as though coaching procedures should be provided to pre-service special education teachers in their field experiences. What better candidate for this role than the supervising university faculty who, not only teaches them the content of the course, but who is considered a highly qualified teacher themself? Better trained special education teachers stay in the field longer than those who lack sound training at the pre-service level (Brownell, Smith, McNellis, & Lenk, 1994) and addressing the contextual variables we can control as researchers is paramount to transform the field of special education.

**University faculty as clinical experience coach**

It is not surprising that coaching is gaining momentum in many organizations because of its potential to increase productivity, in addition to, being a means to developing
procedural knowledge (Price, 2009). In some professions, coaching is seen to empower the highest form of learning (Narayanasamy & Penney, 2014) and is seen as a useful tool for professional development.

There exists a wide range of definitions and descriptions for coaching used across disciplines with the majority found within the organizational and medical training literature. Historically, educational coaching has been seen as a critical component in gaining new skills and facilitating generalizable behavior changes (Joyce & Showers, 1982) for novice teachers in the field. It is used as a professional development tool for new teachers. Traditionally, initial training is completed on site and then coaching occurs, with trained staff implementing the new skills. Educational coaching includes functional and recurring delivery of prompts to the learner, modeling of skills, and positive feedback to safeguard fidelity of implementation. To reduce implementation errors, corrective feedback is given (Horner, 2009). There is no research base for utilizing university faculty as coach for pre-service special education teachers still in the training phase of their careers.

Coaching in a managerial sense has shifted in theory from a practice of control and on telling people what they need to do to the development of an interpersonal relationship intended to promote self-efficacy and empowerment (Batson & Yoder, 2012). Yoder (1995) evaluated career development relationships and their perceived effect on professionalism, job satisfaction, and intent to stay. Managerial coaching was perceived by staff to be the most frequently occurring and valuable relationship.

Medical training literature has a heavy emphasis on developmental relationships that are essential to the support and longevity of staff. The presence of these dyadic career
development relationships have shown to be positively related to job satisfaction and retention in nurses (Batson & Yoder, 2012) and the most frequently reported developmental relationships in the nursing and business literature are mentoring and coaching (Yoder, 1995).

**The role of the University faculty field experience coach**

Narayanasamy & Penney (2014) identify three types of coaching and among them is one-to-coaching that could be potentially useful in training pre-service special education teachers. The coach provides support in achieving specific goals on a one-to-one basis. When this type of coaching is paired with the Practice Spiral Model, also proposed by Narayanasamy & Penney (2014), powerful results could be obtained. The four stages of the Practice Spiral Model are: (1) Explain and demonstrate; (2) Reflect on learning; (3) Review progress; and, (4) Plan to practice again (Figure 1).

![Stage 1: Explain and demonstrate](image1)

![Stage 2: Reflect on learning](image2)

![Stage 3: Review progress](image3)

![Stage 4: Plan to practice again](image4)

Figure 1: The four stages of the Spiral Model by Narayanasamy & Penney (2014)
The first stage of the model involves the coach explaining the relevance of a particular skill to the student clinician. Then, the coach and student clinician break down the skill into components and decide why it is performed in that way. The coach is responsible for summarizing the skill for the student clinician and then demonstrates it for them. Afterwards, the coach clarifies any questions the student clinician may have and gauges understanding through questioning and answering. This stage may last for a short period of time or an extended period of time, depending on the student clinician's competence.

The second stage of the model is short in duration and calls for the student clinician to reflect on their learning. Once this is accomplished, stage three begins. Stage three involves reviewing progress. The coach is responsible for restating and reviewing the task components with the student clinician and then watches as the task is performed. The coach assesses whether or not the student clinician is implementing the procedure appropriately, provides praise and reinforcement for progress being made or offers opportunities for clarification and further practice.

The last stage, stage four, involves practice sessions as needed with the coach offering praise for effective procedural implementation or correction with additional guided practice, if necessary. By using a conceptual framework that specifically addresses the shaping of pre-service special education teacher instructional behaviors, and with the addition of prompt fading, a coaching model that is flexible and broad enough to use with pre-service special education teachers at various levels of their learning careers is created.

Given the above framework, university faculty can utilize direct instruction to support pre-service special education teacher's learning through the modeling and
coaching of instructional techniques. Within the field, faculty supervise learning sessions, model various techniques, provide suggestions, and provide corrective feedback. This gives the pre-service special education teacher the opportunity to connect theory to practice, to make connections across coursework, and to develop reflective and diagnostic skills necessary for efficient, independent service delivery.

While coaching the pre-service special education teaching in instructional techniques, university faculty can simultaneously utilize a skill analysis framework (Price, 2009) to support skill development and focus coaching discussions. A skill analysis framework based on the work of Gobert (2005) and proposes it within the context of nursing. While healthcare professionals and pre-service special education teachers may not appear to have much in common, it can be rationalized that both are required to use skills explicitly and strategically, both need to assess and address developing situations, and each is responsible for producing results. Therefore, this framework could conceivably apply to the field of teaching as it does in nursing.

Gobert (2005) explained that the key premise of skill analysis work is that individuals tend develop templates in their mind that they use to determine how best to proceed in situations. Too often, we rely on routine, internalized protocols and rarely take the time to reflect on our understanding or accuracy of using them. The first step in skill analysis involves the pre-service special education teacher writing down a description of the skill as they anticipate performing it. This description should include what will be done procedurally, as well as, what they think will need to happen next.

Following this, the pre-service special education teacher is ready to work on the four components of skill described by Price (2007, 2008) (Figure 2).
Price (2007, 2008) describes four components of skill: declarative, procedural, “if this, then that” thinking, and available knowledge. These are addressed after the pre-service special education teacher has written down the skill as they anticipate it happening. The procedural aspect of the analysis is usually the first component that is addressed as individuals are typically confident about discussing what they can do and how they do it. The procedural component involves recounting what is done and why, as well as, determining the order in which it is performed and to what purpose. It assists the student with appreciating how he or she thinks about the skill. The coaches’ responsibility at this point is not in judging the work itself, but noting what was said, the sequence of tasks performed, and that which was conveyed by means other than verbal communication. Afterwards, the coach focuses the conversation on what actually occurred and in what sequence it occurred in. This assists the student with reorganizing a new mental template of procedures as they occurred during observation.
What emerges from this discussion of procedural steps, is a review of “if this, then that” thinking in which students are taught to consider many different choices that can be made at any given time. This step identifies the decisions made by the student. As practiced professionals, coaches tend to be automatic in their response to certain situations. This step in the framework of task analysis is not to prescribe certain actions for a variety of situations, but to look for traits or habits that the student and coach can review together so that an alternative procedure can be practiced for the next time.

The available knowledge pool described by Price (2007, 2008) can be likened to evidence-based practices in education. This involves relying on those practices that are steeped in evidentiary support and the knowledge that underpins the skill. Although it is described by Price as an equal component of the framework, I posit that this component should be considered first before any other components are considered. We should always be employing best practices with our students and practicing anything other than that is futile.

Conclusion

There is considerable merit in using coaching as an approach to help pre-service special education teachers develop their clinical pre-teaching skills. The construct and procedures of coaching by experienced, expert university faculty could prepare pre-service special education teachers to: (1) learn procedural knowledge; (2) develop self-efficacy, and (3) develop a commitment to the field of special education. While coaching has been historically employed in management, aspects of the process are amendable to other professions, such as nursing and special education teaching where sound clinical skills guide the work done.
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This dissertation case study examines four student teachers as they participate in a community of practice focused on culturally relevant pedagogy for immigrant students in an urban elementary school. Despite a recently adopted scripted literacy curriculum, participant educators found ways to tailor their instruction to their unique student populations by developing a system in which they attended to the “non-negotiables” of the standardized curriculum while incorporating themes that reflected their diverse students’ lived experiences.

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Extended Abstract

Purpose
In the United States, ten percent of students are English learners (ELs). This amounts to 4.7 million students, and the number increases every year (U.S. Department of Education, National Center for Education Statistics, 2013). In the past two decades, the state of Minnesota has seen a 300% increase in the number of ELs that its schools serve. Currently, as Minnesota schools educate 65,000 English learners across the state, teachers and school administrators are called to consider how to best meet the needs of this changing demographic. Given the longstanding opportunity gap between white students and students of color in the state, this challenge is particularly urgent (National Assessment of Educational Progress, 2009).

This dissertation collective case study seeks to shed light on the gap in understanding about how teachers learn to enact culturally relevant pedagogy (CRP) for ELs. Four student teacher participants are examined during their student teaching experience as they participate in a community of practice (CoP) focused on CRP for immigrant students in an urban, culturally diverse elementary school. The data generated from this research are aimed at answering the following questions:

1. How is understanding CRP for ELs socially mediated through participation in a CoP?
2. In what ways is pedagogy for ELs shaped by teacher candidate participation in a CRP-based CoP?
3. What do student teachers identify as obstacles to CRP enactment for ELs and how do they overcome them?

The objectives of this research are to learn from the experience of the four participants and draw conclusions about ways in which teacher education can be galvanized to better prepare culturally relevant pedagogues for immigrant learners in the current sociopolitical schooling culture.

Theoretical Framework
This study is undergirded by two theoretical frameworks. The first is culturally relevant pedagogy (CRP). Originally conceived in response to a need for schooling to be more relevant to the lives of African American students, Ladson-Billings (1995) defines CRP as:

A theoretical model that not only addresses student achievement but also helps students to accept and affirm their cultural identity while developing critical perspectives that challenge inequities that schools (and other institutions) perpetuate. (1995, p. 469)

The three central tenets of CRP are: social critique, academic success, and cultural competence (Ladson Billings, 1995). That is, in order to enact CRP, a teacher must demonstrate pedagogies that: engage students in critical examination of content, provide students with rigorous academic tasks, and take into account students’ home cultures.

Researchers assert that CRP is essential in closing the opportunity gap, as it recognizes the central role of students’ cultures in all aspects of teaching and learning and
it acknowledges and responds to the current schooling climate that places students from diverse cultural backgrounds in learning environments that do not mirror their home cultures and values (Langer, 1987; Petchauer, 2011; Price-Dennis & Souto-Mannin, 2011). CRP calls teachers to be made aware that students’ identities, beliefs, and behaviors are shaped by their culture (Gollnick & Chinn, 1998) and it presents a unique challenge to teachers in that they cannot present relevant pedagogies without first knowing their students. Phuntsog (2001) considers that the true test of CRP “may lie in its ability to create classrooms where race, culture, and ethnicity are not seen as barriers to overcome but are sources of enrichment for all” (p. 63). There is a wealth of research that touts the benefits of CRP. However, little is known about how teachers learn to enact it.

The second theoretical framework in this study is social learning theory. Social learning theory posits that learning is the result of observing and modeling the attitudes, displays of emotion and behaviors of others (Bandura, 1997). Bandura explains that “Most human behavior is learned observationally through modeling; from observing others, one forms an idea of how new behaviors are performed, and on later occasions this coded information serves as a guide for action” (Bandura, 1997, p. 22). Social learning theory considers learning to be an entirely social phenomenon and the result of one’s lived experience in social environments (p. 3). It is complementary to Vygotsky’s (1978) sociocultural theory in that they both argue that social interaction is a fundamental element in cognition.

The aforementioned theoretical frameworks serve unique functions in this study. While CRP serves as a model for equitable and relevant teaching for immigrant students, social learning theory informs the methodology of CoPs. Through social learning in a CoP, student teachers learn to enact CRP.

Modes of Inquiry

While the phenomenon of communities learning together is as old as humanity itself, the use of Communities of Practice (CoPs) as a learning theory and a framework for research was originally conceived of by Lave and Wenger in their seminal book, Situated Learning (1991). The authors employ social learning theory to challenge traditional theories of experiential and internalized learning as they explain and illustrate how people learn in social groups, or CoPs. In the introduction of the text, Hanks (1991) explains that “rather than asking what kind of cognitive processes and conceptual structure are involved, they [Lave and Wenger] ask what kinds of social engagements provide the proper context for learning to take place” (p. 14). Traditional notions of learning have focused on an individual’s independent acquisition of knowledge. While Lave and Wenger offer anecdotal examples that illustrate that ‘learning by doing’ is part of participation in a CoP, they argue that the membership in a community of learners and experts is more influential than “doing” alone.

Wenger (2006) defines CoPs as “groups of people who share a concern or a passion for something they do and learn how to do it better as they interact regularly” (Wenger, 2006, para. 3). In another definition, he focuses on the process rather than the product when he writes that learning is a process that is the result of participation in a social community. Tennant (1997) asserts that Lave and Wenger’s concept of situated
learning considers individuals acting as full participants in the world and generating meaning from their interconnectedness. Another notable difference between learning as internalization and learning in a CoP is “an evolving, continuously renewed set of relations” (Lave & Wenger, 1991, p. 50) that inevitably shape changing social constructs.

While community and social learning are essential to CoPs, there is a third needed component in order to differentiate CoPs from any social gathering. It is a focus on shared practice. Wenger (1998) posits that participation in CoPs “refers not just to local events of engagement in certain activities with certain people, but to a more encompassing process of being active participants in the practices of social communities and constructing identities in relation to these communities” (p. 4).

Wenger names the following four components as characteristic of CoPs: meaning, practice, community and identity (Wenger, 1998, p. 5). Figure 1 illustrates the interconnectedness of the four realms of CoPs and how learning takes place. For the purposes of this study, the outer bubbles (learning as doing, learning as belonging, learning as becoming and learning as experience) are used as a frame for analysis of participant learning.

Figure 1:

CoPs is a fitting theoretical framework for research about teacher learning in general because teachers work socially, as members of groups. They often gather together in intentional communities (regionally such communities are known as professional learning communities [PLCs]) and seek to learn how to improve their practice. My proposed dissertation study includes one focus group centered on CRP praxis that serves as a CoP. In the CoP, participants consider existing obstacles to CRP enactment and strategize how to overcome such obstacles so as to provide an education that offers windows and mirrors (Style, 1996) to immigrant students, in particular.

Data Sources

Data collection sources are: nine CoP meetings, weekly digital journal entries, pre-study, mid-study and post study interviews and frequent class observations. Data about participants’ socially mediated learning and its relationship to their understanding
of and enactment of culturally relevant pedagogies is coded and analyzed based on the framework of CoPs.

Results and Conclusions

Prior to the onset of this study, the researcher learned that a scripted standardized literacy curriculum that limited teachers’ abilities to enact culturally relevant pedagogies was adopted by the school administration. Student teachers and seasoned teachers found themselves required to read from timed scripts that reflected white middle class cultural norms that many of their students struggled to make sense of. Participants expressed frustration in CoP meetings as they realized that they would not be able to firmly abide by the administrator’s request to adhere to a rigid curriculum and attempt pedagogies that are culturally relevant to immigrant learners.

In response to this obstacle, one participant dismissed the mandatory curriculum and presented a social studies unit about human rights that was engaging, energizing and wholly culturally relevant to her student population. Two participants shared that they felt so restricted by the standardized curriculum that they struggled to find spaces in the day for cultural relevancy. The fourth participant developed a system in which she attended to the “non-negotiables” of the standardized curriculum while “weaving” throughout themes that reflected her diverse students’ lived experiences.

Findings illustrate transformed and culturally relevant pedagogies for ELs through participation in this low-stakes CoP despite ideologically competing mandates from school administration. Implications of this study call teacher education programs to consider implementing CoPs into the student teaching experience so as to yield new teachers who are prepared to enact pedagogies that reflect the lived experiences of their immigrant students. Such an initiative will help to bridge the gap between teacher preparation and teacher induction, while fostering an environment where empowering pedagogies are co-constructed amongst educators.

Scholarly Significance of This Work

Advocating for the preparation of culturally relevant teachers is crucial yet precarious, because teacher preparation programs graduate teachers into workplaces that often do not honor their commitment to culturally relevant teaching. For this reason, it is essential that teacher educators establish a strong and sustaining bridge from the ivory tower to the classroom. Price-Dennis and Souto-Manning (2011) assert that there is a “need to invite pre-service teachers to engage in fostering pedagogical third spaces which syncretically bring together mentor teacher academic expectations and student interests and cultural repertoires” (p. 236). CoPs can serve as such third spaces.

Although CRP is often touted as a solution to the opportunity gap, it is commonly misunderstood and little is known about how teachers can be prepared to enact it. Goodwin (2002) writes that this problem “must galvanize teacher preparation programs to rethink how their curriculum prepares pre-service teachers to work effectively with diverse students” (p. 157). Studies such as those of Dennis and Souto-Mannin’s (2011) and Hill (2012) are recent examples of research that examine how teachers respond to apparent opportunity gaps by tailoring instruction to reflect African American students’
lived experiences. There is a wide range of studies that investigate how CRP can be enacted for African American students. However, there is a dearth of literature that examines how CRP can be enacted for ELs. The limited studies that examine the role of CRP for ELs (Orosco and O’Connor, 2013; Salazar, 2010; Wortham and Contreras, 2009) support increased professional development for teachers in the area of CRP and call for additional research. This study responds to the dire need to research in the area of teacher learning and CRP.

References


This study explores how Japanese university students’ perceptions of their classes and instructor personality contribute to their overall rating of the English class. The study also investigates whether the students rate Japanese instructors and native English speaking instructors differently. Data was collected using a questionnaire comprised of instructional rating and teacher personality rating sections. The instructional rating section was based on the Instructional Rating Form (Tomasco, 1980), and European Portfolio for Student Teachers of Languages (Newby et al., 2007) whereas the teacher personality rating section was derived from Murray, Rushton, and Paunonen (1990). The study employed statistical analyses including multivariate analysis of variance (MANOVA), principal components analysis and regression analysis. The results of the study revealed that students’ perceptions of the class as interesting, organized and clear, positively influenced their overall rating of the class. On the other hand, their perceptions of their instructor as aggressive, dominant, anxious, and authoritarian negatively affected the overall rating. The findings also indicated that when it comes to Japanese instructors, personality traits such as being sociable, ambitious, intellectually curious, intelligent, and gentle influenced students’ overall ratings.
Submission Number: 514

**Title of Submission:** Complementary Health Care: Adopting a Holistic Model

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Applying a Holistic model to Medical Education:

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Abstract:

Situating this study within a scholarly framework, Moberg (2008) suggests that “as scientific knowledge of spirituality increases, so does a greater need for further research on the topic” (p.12). He argues that studies of spirituality are still in their infancy after having been generally ignored in the medical, social and behavioral sciences until recently (Moberg, 2005). From an educational perspective, our study implications include applying findings to better facilitate a holistic medical teaching model that includes spirituality. This paper introduces some gaps within health care systems and presents some examples how the healing of some individuals has allegedly involved a form of spiritual intervention.

Introduction to Study:

In 1998, the World Health Organization (WHO) stated that a strictly biomedical view of patients will no longer be suffice for health care, given the mounting evidence of the value of spirituality and spiritual well-being to overall health and quality of life (Hartung, Henriques & Young 2012; Sawa, 2014 ). Their stance is echoed by numerous medical accreditation agencies and professional associations that now require patients’ spiritual needs be addressed. However, the Royal College of Physicians and Surgeons of Canada, who sets the medical model standards in Canada, does not specifically address spirituality ( Hartung, Henriques & Young 2012; Sawa,
Studies addressing spirituality within health care could support innovating new medical standards.

Considering spirituality is an essential component of the human condition, such studies are significant. “Spiritual well-being promotes better immune function, is a major determinant of quality of life in patients, helps patients cope with illness, improves energy level in the chronically ill, improves patient perceptions of quality of care, and can be an important coping resource” (Hartung Henriques & Young, 2012, p. 79). A major challenge for nurses has been trying to communicate appreciation for the spirituality of their patients. “Terminological confusion abounds and is responsible in part for nurses ‘reluctance to address their client’s spiritual needs’” (Heriot, 1992, p. 69) For the purpose of this study, spirituality is defined as a latent inherent truth awakened by contemplation, rituals, peak life experiences and caring acts of kindness; when awakened, spirituality is a sensation of the sacred, a sentiment of hope, a feeling of enthusiasm and excitement, and a heart-felt sense of interconnection with others (Doetzel, 2006).

Collingwood (1940) argued that science and spirituality are “inextricably united, and stand or fall together” (p. 41). Because the metaphysics of spirituality is a “science of absolute presuppositions” (Collingwood, 1940, p. 41), it is immeasurable and commonly ignored by scientists. “Spiritual oneness cannot be objectively verified, but our literature, our music, and our current yearning for spiritual connection” (Lerner, 2000, p. 49) verify its authenticity. Also, a transformed state of consciousness associated with spiritual experiences is “biologically observable and scientifically real” (Newburg, D’Aquili & Rause, 2001, p. 7). As a higher state of consciousness, a spiritual experience may have a neurological nature that alters the brain.
Research (Newburg, D’Aquili & Rause, 2001) suggests that whatever the nature of a spiritual experience, meaningful neurological functional change, takes place within both the brain and heart. This insight suggests that human nature has mental, physical and spiritual dimensions that are interconnected (Bateson, 1994). According to Pearce (2002), people’s hearts maintain a holographic electromagnetic connection with the mental, physical and spiritual dimensions of their being.

Spiritual experiences such as the peace of mind attained during meditation are evident in “both automatic shifts and hormonal changes observed during such states” (Newburg, D’Aquili & Rause, 2001, p. 44); experiments conducted with Tibetan meditators and Franciscan nuns demonstrated their spiritual experiences “were in fact associated with observable neurological activity” (p. 36). Other studies have demonstrated that people participating in spiritual behaviours such as prayer and meditation have experienced decreased heart rates and improved immune systems, and individuals involved with ritualised dancing, singing or chanting have experienced ineffable pleasurable feelings, by stimulating the brain’s cortical rhythms. Dyer (2001) noted that “just being in the energy field of those who meditate raises the serotonin levels of the observers” (p. 58); serotonin is a neurotransmitter in the brain that affects how peaceful and harmonious a person feels.

Prayer enhances people’s conscious awareness of their spirituality, which promotes a sense of well-being (Vaill, 1998). Research on intercessory prayer conducted in a controlled double blind study with 406 individuals found that both the subjects being prayed for and the agents doing the praying improved their measures of self-esteem (Dossey, 1999). Other studies “reveal healing can be achieved at a distance by directing loving and compassionate thoughts,
intentions, and prayers to others” (Dossey, 1999, p. 25). Thus, prayers may help in the healing process.

**Addressing Gaps**

One of the gaps within health care education is that Spirituality is absent in the Canadian competency framework (Sawa, 2014). In contrast to the United States and Great Britain, the literature is limited with respect to spirituality in undergraduate curriculum in Canada (Sawa, 2014; Hartung, Henriques & Young 2012). However, CanMEDS competencies required of Canadian physicians include the expression of empathy, compassion, trustworthiness, effective listening and respect for diversity. And, these particular expressions are associated with “spirituality,” as indicated in a recent study of spiritual healers (Sawa, 2014).

Sawa (2014) outlines examples of how the Americans tend to honor spirituality within their health care system. For example, the importance of compassion is a part of their Code of Medical Ethics: The American Medical Association developed a Code of Medical Ethics that suggested physicians should provide competent care based on respect and compassion-values, which can be considered as the core to spirituality (Puchalski 2014 p. 11., as stated in Sawa, 2014). The American College of Physicians indicated that physicians should extend their care to include psychosocial, existential, or spiritual suffering. In 2004, the field of palliative care cited spiritual, religious, and existential issues as a required domain of care (Sawa, 2014.)

Sawa (2014) and Hartung, Henriques & Young (2012) argue that a person’s spiritual well-being promotes a better immune function, which is a major determinant of quality of life in patients, as it improves their energy levels and understanding of compassion. Our research findings suggest that the expression of compassion is central to spirituality within most religious beliefs. Despite such acknowledgements about spirituality, the research team agreed that western
medicine has tended to overlook spirituality and spiritual healing and alternatively has focused
on a physiological aspect of health care that relates to the Greek era (Sawa, 2014; Winchester
Sawa, Doetzel, Maynell, Zembal & Motta, 2012)

“Spirituality” appears to mean different things to different people and often refers to an
individual’s attempts to find meaning in life which can sometimes include a sense of
involvement in the transcendent outside institutional boundaries (Winchester Sawa, Doetzel,
Maynell, Zembal & Motta, 2012). Constructs from our research which are somewhat at
variance with the current literature includes the finding that “divinity” is a consistent feature of
spirituality amongst all religions/cultures (except Buddhist) (Sawa 2009). Tied to this was the
construct of empowerment or energy. This energy was seen to flow from the divinity. This can
be applied to current concepts by viewing the clinician as a vehicle for divine activity. This is
exemplified by the love and compassion demonstrated by the healer. At the same time, each
person is viewed as having a nature, which contains divinity and grows towards a fuller and
fuller expression of this divinity.

Our research interests (Winchester Sawa, Doetzel, Maynell, Zembal & Motta, 2012) have been augmented by some of the team’s personal healing experiences. Reflecting on some data from the transcripts led me to reflect on my husband’s alleged healing experience. When he arrived home in excruciating pain one afternoon, I rushed him to the emergency room at a local hospital. We were informed, after an X-ray was taken, that his intestine had a blockage which prevented him from digesting any food, or releasing toxins. A physician suggested my husband would need surgery within the next few days to remove the blockage. When I informed a physician that I was bringing into the hospital room a group of
people to form a prayer circle, and a Reiki Master to assist with the healing process, he questioned my intention.

A multi-faith prayer circle composed of believers from Christian, Jewish and Muslim communities joined hands as they stood around my husband’s bedside and prayed together. I prayed in unison with a caring group of individuals who demonstrated compassion and hope, as they called out to a common God, while requesting divine healing. I felt electricity flowing in and out of me, as I prayed. And, I noticed my husband’s face was gradually taking on a healthy appearance.

After these prayers, my husband received Reiki from a member of our research team. He claimed the treatment had given him energy and a sense of wellness. The following morning, my husband’s X-ray showed a major change in the intestinal blockage and his physician suggested delaying surgery. Another prayer session, the following evening, appeared to have resulted in the blockage being totally removed, as my husband never required any surgery. Acting very healthy and happy, he left the hospital the following day. Several weeks later, the doctor stated that his X-rays taken did not show any evidence of the original diagnosis.

Previous to this experience of being prayed for, my husband had doubted my dependence on faith and prayer, when I was diagnosed with cancer. Being informed that an illness could annihilate my life within a few months, if I didn’t receive surgery, coerced me to look death in the face and embrace my dear life. During the traumatic moments of being within this life or death situation, I sought out spiritual healers and engaged in singing, dancing and writing before and after surgery. Several Shaman healers entered my life at that time, and I benefited from their spiritual interventions, ranging from rituals to prayers. “Through his heroic journey and efforts, the shaman helps his patients transcend their normal, ordinary definition of reality, including
definitions of themselves….and of their illness” (Harner, 1980, p. xvii). With Shamans, “caring and curing go hand and hand” (p. xviii). After spending time with two Shamans, I viewed my illness as a teacher and a blessing, not as an illness or a curse. I came to believe that some healing had already taken place before my surgery. On route to the operating room, I had also received the anointing of the sick by a priest, who prayed for the surgical procedure to result in healing. Later, my physician could not explain how or why I had healed from the surgery and cancer so quickly and successfully. He said that he had sensed angels in the operating room guiding him in the surgical procedure.

Researchers, such as D. Aldridge, in his article “Spirituality, Healing and Medicine” published in the British Journal of General Practice (Aldridge, 1991) support spirituality within health care. Additionally Graham and Al-Krenawi, Graham and Moaz, (1996) have examined the healing practices among the Bedouin that involve a spiritual component from the vantage point of Social Work. Both of these studies are very supportive of our present research activities (Sawa, 2014; Winchester Sawa, Doetzel, Maynell, Zembal & Motta, 2012). For example, Aldridge states:

The natural science base of modern medicine influences the way in which medicine is delivered and may ignore spiritual factors associated with illness. The history of spirituality in healing….reflects the growth of scientific knowledge, [relates to] demands for religious renewal, and [responds to] the shift in the understanding of the concept of health within a broader cultural context. General practitioners have been willing to entertain the idea of spiritual healing and include it in their daily practice, or referral network. Recognizing patients’ beliefs
in the face of suffering is an important factor in health care practice.

(Aldridge, 1991, p.224)

Recently, there has been considerable interest shown in England and Scotland, as well as in Australia, in encouraging health care workers to follow the lead of the World Health Organization which, roughly a decade ago, began to consider the possibility of adding “spirituality” to its definition of “health”. (See for example Cheungsatiansup’s (2003) article that proposes the inclusion of spirituality in assessing health.)

In Scotland the Scottish Executive Health Department (SEHD) requires all physicians to consider that they have a responsibility for the spiritual state of their patients and in guidelines circulated to the Health Boards in 2002 the SEHD required NHS organizations “to develop and implement spiritual care policies that are tailored to the needs of the local population”. Indeed, the Health Minister for Scotland had earlier expressed his determination to make spiritual care a central element in the way that the National Health Service cares for people, and that such care should be undertaken by the whole health care community (Chisholm, 2001).

Headley G Peach (2003) in Australia has written a number of articles on the necessity of taking the relationship between spirituality and health seriously as well as the need for more research into the linkages. In her 2003 article in the Medical Journal of Australia “Religion, Spirituality and Health: how should Australia’s medical professionals respond?”, she argues that a survey of the more rigorous studies looking at religiosity and the onset of, or recovery from, a broad range of medical conditions suggest a positive association between greater religiosity and a better health outcome. The evidence, she argues, is suggestive of a causal association but it is not conclusive.
According to a Priest healer, interviewed for our study: “anointing of the sick removes a spiritual blockage bringing the body/nature into balance, like pharmaceuticals, (unpublished Sawa transcripts, 2009). “Great Spirit is connected with the inner spirit of a person and a healer re-connects the inner spirit with Great Spirit (God). The source of healing is the Lord, God, Creator or Higher Power and the healer is a conduit. Physical healing is seen as the Lord freeing a person’s spirit or healing his/her soul by creating a harmony within the person. The healing occurs via prayer or healing Sacrament, “anointing of the sick” whereby an external power goes through a person and heals them spiritually, which gives them hope and forgiveness of sins. Forgiveness of sin occurs when the (spiritual) blockage, which is out of sync with the Creator, is removed (Unpublished Sawa’s interviews, 2009.)

Our research team (Winchester Sawa, Doetzel, Maynell, Zembal & Motta, 2012) concludes that there is considerable support in the medical research community for further work in the area of the relationship between spirituality, religion and health and in what follows we wish to report, in a general way, what our research group has been doing to add to the work done so far. With the exception of work of al-Krenawi, John Graham and Moaz, along with a few others looking at spiritual practices in diverse cultures, there is limited research on the wide range of spiritual healers who ply their trade in the North American context. To help fill this gap we have engaged in the work we wish to relate here.

**What is Our Research About?**

For the last five years we have been discussing our lead researcher’s interviews with a wide range of “holistic” healers drawn from a number of healing traditions that may be loosely described as “spiritual” healing practices (Winchester Sawa, Doetzel, Maynell, Zembal & Motta, 2012). Most of these healers have been in Canada or the United States though their
origins are often wider than this. Russell Sawa, our leader and a physician himself teaching at
the University of Calgary Medical School, conducted interviews with 30 alleged healers. The
interviewees were a purposeful sample drawn from a wide spectrum of healing practices. They
were identified by word of mouth and often from earlier healers interviewed. These healers
included Aboriginal, Shaman, Christian (both Protestant and Roman Catholic), Hindu, Buddhist,
Chinese, Wicca and “Energy” healers, including Reiki practitioners. Our objective was to
discover something of their claims to healing or even to curing and also to gain some
understanding of their approaches to healing that might prove useful to mainstream medical
practice in North America.

Each of the 30 healers studied was asked to offer narratives of their healing experiences
Sawa, 2014; Winchester Sawa, Doetzel, Maynell, Zembal & Motta, 20120. There was no
definite set of questions chosen in advance and they proceeded to tell their stories to the
interviewer. New interviews were added as themes arose and required more data for further
explanation. Whenever new questions arose, they were repeated in subsequent interviews.
Audio tapes were made of each and every interview and transcribed in totality. Our approach
was reviewed and approved by the Ethics Committee of the Faculty of Medicine at the
University of Calgary. Whenever a transcribed interview was available our team met to discuss
the interview in detail and to summarize it in terms of a collection of definite propositions
representing the content of the interview for further discussion and comparison. Our approach is
centrally in the qualitative research tradition and follows, in large measure, the approach
suggested by Bernard Lonergan in his book Insight. But it is also evident that we were guided in
large measure also by everyday commonsense in our trying to understand what our informants
told us.
Who are We?

Our team of researchers consisted of myself, an educator and sociologist who teaches at both Mount Royal University and the University of Calgary, Russell Sawa, a physician and Associate Professor in the medical school at the University of Calgary, Ian Winchester, an Associate Professor in the Faculty of Education at the University of Calgary, Hugo Maynell a retired professor of philosophy of religion, and Debbi Zembal a practicing nurse and energy healer in the Reiki tradition (Winchester Sawa, Doetzel, Maynell, Zembal & Motta, 2012). What we discovered early on was that on the one hand there were some striking similarities in the practices and claims of all of our healers interviewed. But equally important, there were striking differences among them. In this paper, we will try to summarize the most important similarities and differences. While each healer had interesting cases to bring to the interview, and while all such cases were plausibly characterized by what struck us as very honest and believable interviewees, we were disappointed on one point with practically all of the alternative healers interviewed. Not one of them kept good records of the physical or mental state of the patient before or after intervention by the healer in question. As our future work will proceed with our actually observing such healers in the context of their practice we are determined to make sure that such records are always kept in the future and are clear and unquestionable (Winchester Sawa, Doetzel, Maynell, Zembal & Motta, 2012).

Interventions in all cases involved the healers listening carefully to the patients coming to them with a complaint and subsequently making suggestions as to what the patient might do next or what treatment to follow (Winchester Sawa, Doetzel, Maynell, Zembal & Motta, 2012). Often the narrative of the healer involved the patient coming to the healer with a prior diagnosis made in the course of ordinary, western medical practice. These diagnoses might
involve such things as broken bones, tumours or cancers, infections that would not heal or go away or, in one interesting case; the patient’s suffering from being unable to enter the kitchen in his apartment due to a headless man blocking the way. In practically every case relayed to us the healer claimed to have affected a form of healing for the disorder.

**Healing vs. Curing**

Initially we (Winchester Sawa, Doetzel, Maynell, Zembal & Motta, 2012) assumed that what was meant was that a “cure” in the standard Western meaning of the term was what had resulted. But in fact in most cases, while the physical disorder was often claimed to be still present, it no longer blocked the patient from getting on with their lives in a normal or practically normal fashion. In some cases not only did our healer claim to have “healed” the patient in this sense, but also to have been involved in the process of the patient’s physical or mental disorder disappearing entirely, that is of “curing” in the ordinary Western medical sense. However in no case was supplementary material of the kind we would have liked to see offered us in the form of a prior medical diagnosis of the physical disorder with appropriate pathological study or post treatment study indicating the disappearance of the disorder.

Because of this sort of distinction forcing itself upon us frequently in our earliest study of these interviews, we began to make a practical distinction between “healing” and “curing” (Winchester Sawa, Doetzel, Maynell, Zembal & Motta, 2012). Something like “kissing it better” appeared to be systematically going on in the actions and results of practically all of our alternative healers using what they frequently considered as spiritual means of intervention.

**Ordinary vs. Paranormal Intervention**
Another distinction that forced itself upon us early on in our study of the interviews is that between what one might call claims of ordinary spiritual intervention and claims of paranormal intervention (Winchester Sawa, Doetzel, Maynell, Zembal & Motta, 2012).

Some literature we discussed within our group meetings was taken from the book, “Reinventing Medicine.” In this book, Dossey (1999) states “many studies reveal that healing can be achieved at a distance by directing loving and compassionate thoughts, intentions and prayers to others, who may even be unaware these efforts are being extended to them” (p. 25). Dossey believes that the “distant intention of prayer” is a major secret kept in medicine. “Every physician becomes a collector of anomalies that break the rules; cures and remissions that don’t fit the norm . . . get quietly filed away over the years (p.7). Prayer advocates are commonly suspected of promoting their personal religious beliefs under the guise of science.

One interviewee appears to have silenced some of his stories that appeared out of the ordinary (unpublished interviews, Sawa, 2009). As a physician engaging in healing work, this study participant claimed that he surrenders his intellect and analytical mind when receiving the Blessed Sacrament. He insisted that “perfect love casts out fear” and the “greatest weapon we have against illness is knowing Jesus.” To assist this interviewee with being an instrument for healing, he prays with his secretary before seeing any patients. His choice to pray appears to support Helminiak’s (1996) suggestion that spirituality is “deification through the Holy Spirit and in Christ” (p. 37). During his interview, this physician revealed that a female patient had calmed down and expressed a healing experience after she had touched a picture of Jesus, hanging on his office wall. He also told the story of a man with terminal cancer who was prayed for by him; and, later this patient’s ultrasound was reported as being normal, and the patient claimed he had been healed. Additionally, the physician articulated a case of a patient having
recovered from being in a coma, two weeks after he had prayed for this patient. And, following the healing experience, this patient had spoken to the physician about having a near death experience. To verify alterations in patient’s health conditions after prayer, all the successful healing cases reported by this physician are documented in his medical files.

When reviewing the transcript of this physician healer, I questioned why his successful stories of faith healing were being muted, rather than spoken about openly about with peers or written about in journals. Having his stories muted could be a case of withholding a major truth about complementary health care. I wondered if he feared being misunderstood by his peers or being labeled “unprofessional” by traditionalists within the medical profession. Finding answers to

*The Ordinary Spiritual Intervention*

The ordinary spiritual intervention was invariably connected with the concern of the healer to listen to and to understand the cultural, religious or philosophical presuppositions of their patients and how they understood their disorder, ailment, trouble or problem that had brought them to the healer in the first place (Winchester Sawa, Doetzel, Maynell, Zembal & Motta, 2012).

One might say that the healers all treated the patient’s “spiritual understanding” in the sense of the German notion of “geistewissenschaft” where “spirit” here is related in a central sense with how the person is imbedded in their particular culture or their particular understanding of that culture. This is not a common usage in the English language and it makes it rather difficult for us to talk well about the relationship of “spirit” to “culture”. We refer to the social sciences in this context, but that papers over the possibility that most of human spirit
resides in the context of human culture, a culture that is entirely man-made but is just as real for us as is bumping into a rock or a tree or being pulled downward towards the centre of the earth by the force of gravity after the manner of the world recognized by physics. In all such “ordinary spiritual intervention”, while there is understanding of the patient’s picture of the world from the vantage point of the spiritual or holistic or non-traditional healer, there may be primarily a compassionate regard for the patient and wise suggestions as to how better to conduct one’s daily life. This intention to help and the invocation of manifest love in the sense of *caritas* in Latin or *agape* in Greek was claimed by practically all of our healers.

To take one typical example, one patient came to a healer with an apparently incurable cancer (Winchester Sawa, Doetzel, Maynell, Zembal & Motta, 2012). The patient was terrified of dying with the cancer and unable to function any longer in everyday life. The healer was able to convince the patient that the best chance of cure was that the patient come to grips with that everyday life and carry on much as before. The patient understood this and with the aid of the healer began functioning again. The physical symptoms of the cancer subsided and the patient went back to a productive and useful life for a number of years before ultimately succumbing to the disease. This patient, in our terminology, was healed but not cured.

The reverse possibility also exists (Winchester Sawa, Doetzel, Maynell, Zembal & Motta, 2012). For example, suppose someone comes to a healer after having a breast removed for breast cancer but the patient cannot get through a day for the rest of her life without worrying about the recurrence of the cancer either in the remaining breast or somewhere else on her body. Even thought this patient might live until her nineties and suffer no recurrence of the cancer, she is medically cured of her cancer but certainly not healed. What our non-traditional healers often
do is to help such a person towards healing given a prior medical intervention of a curative kind so that they can get on with their lives in a normal fashion.

Paranormal Claims

On the other hand while a number of our healers engaged in what we might term intervention relating directly to the immediate cultural understanding of the patient in ways that are like “kissing it better” with a child, others made claims of the invocation of special and uncommon powers or interventions either by themselves, or by some form of guide in a world outside our everyday, or by the invocation of a higher power similar to that invoked by, say, Alcoholics Anonymous (Winchester Sawa, Doetzel, Maynell, Zembal & Motta, 2012). Such claims were common among Roman Catholic, Hindu, Shamanistic, Reiki and other energy healers. But they were not part of the claims of Wiccan or Buddhist healers.

Here are a couple of examples.

The case of Headless Max. One of our cases we refer to as the case of Headless Max (Winchester Sawa, Doetzel, Maynell, Zembal & Motta, 2012).

The case in question involved a patient coming to a spiritual healer because the patient could not enter into his own kitchen in his flat because he invariably encountered an apparition behind the kitchen counter, an apparition with no head. This headless being blocked the way into the kitchen for the patient in question. The story continued as follows. The patient worked in northern Alberta with an oil exploration firm. His daily work involved flying into remote regions of the lake and forest country of northern Alberta in search of geological information, usually with a colleague. In order to fly in and out of the remote location the patient and his colleague would arrive by helicopter and depart by helicopter. Sometimes the helicopter could not actually land, so the two colleagues would have to be picked up by their climbing up a rope
hanging from the helicopter. On one fateful occasion the patient climbed up the rope first and
the colleague second. But at some point while flying away to find a more secure landing point
before being able to get in to the helicopter the colleague simply fell off the rope and
disappeared, never to be found. On return to his flat the patient always saw Headless Max in his
kitchen. The healer was a Roman Catholic priest who told the patient that he was suffering from
possession by a demon, something that the patient, himself a Roman Catholic, believed possible,
and that the healer would do an exorcism of that demon which he did following the standard
Roman Catholic procedures. Headless Max disappeared, never to return. In this case a higher
power was invoked, namely God acting through the Holy Spirit as referred to in the Apostles
creed as a member of the Holy Trinity.

Perhaps of all our cases this one, which came early in our experience, has been
most important for us, for it permitted us to see a situation in which the separation between
healing and curing, which was generally an important distinction for us, dissolved or appeared to
dissolve (Winchester Sawa, Doetzel, Maynell, Zembal & Motta, 2012). On the other hand it
posed a number of puzzles for us in its own right. Was this a case of a psychological illness that
could only be cured by “spiritual” means? Was it important, for example, that “demons”
objectively exist who could possess an individual in such a way that they could not get on with
their everyday lives so long as they were so possessed even to the extent of not being able to go
into their own kitchen? Some of our research group believed in the existence of demons, some
in the possibility of their existence and some thought that such beliefs could not generally be part
of the common experience of mankind, though “real” for some individuals. Or was it sufficient
that both healer and patient (or sufferer, perhaps) believed in the existence of demons on the one
hand and in the possibility of exorcism of the demon through religious means on the other? Or
was it even possible, perhaps, that while a patient would have to believe in the demons which
“possessed” him or her, the healer need only enter into the “personal world” of the patient and
offer the exorcism as a for which the patient might believe could affect a cure without actually
sharing the reality of the world with the patient? Could, for example, the healer be effective
even though not sharing the personal world of the patient? We have not resolved these matters
to our satisfaction as a research group, but we continue to explore cases in which the healer
appears to be good at entering into the personal world of the ill person in such a way that healing,
if not curing, is possible through the intervention of the healer.

The case of an aboriginal patient and healer: common reality and extraordinary reality.

In another case an aboriginal patient was suffering from personal difficulties relating in
part to family relations and in part to physical symptoms (Winchester Sawa, Doetzel, Maynell,
Zembal & Motta, 2012). The healer, himself aboriginal, suggested to the patient that he would
dream tonight and that he, the healer, would join him in his dream and together they would visit
and approach some of the patient’s wise ancestors to find out what to do. The patient believed in
this course of action and engaged in the dream exercise with his healer, listened to his ancestors
in his dream with the guidance of the spirit guide that the healer had met and invoked for the
journey in the dream land and the patient engaged in the suggested course of action and was no
longer bothered by his personal difficulties or physical symptoms.

This again raises for us questions relating to the “worlds” inhabited by healer and patient
seeking healing intervention (Winchester Sawa, Doetzel, Maynell, Zembal & Motta, 2012). It
suggests, perhaps, that we have to distinguish between the common world of everyday waking
life for most of us, the common world of common sense and natural science, and the personal
worlds that are so real for the patients who approach alternative healers of the kinds interviewed.
Again some of our research team think that if something is part of the personal world of an individual seeking healing intervention then that personal world is in fact part of the “real” world, though perhaps an unusual extension of it. For others on our team a distinction has to be maintained between the common world of common sense and natural science, a world that all of us experience and where we can engage in common and repetitive activities on the one hand, and the private or in any event non-common world of individuals in which they experience extraordinary things not found in the common world. For those of us with this latter view, both the experiences of the common world of common sense and natural science are real experiences for us all, but in the case of the extraordinary experiences of some of the patients and healers, that part of their world is real for them but not real in the common world.

*Other cases.*

Generally for most cases related to us, the healer not only would find out how the patient’s suffering, disorder, disease or distress was related to their personal beliefs but might invoke a hypnotic state, or a state of meditation, or prayer with the patient (Winchester Sawa, Doetzel, Maynell, Zembal & Motta, 2012) Sometimes this might involve the healer describing to the patient how he, the healer, had entered the patient’s mind and met a spirit guide to the patient’s mental and physical states, perhaps by moving to the “Buddha plane” and directly experiencing the patient’s troubles and once knowing what the difficulty was returning to the everyday world to suggest a course of action to the patient. Thus for this healer sometimes cure and sometimes healing were invoked through paranormal means, namely, apparent answer to a joint prayer.

While a number of our healers were drawn from Shamanistic, Aboriginal, Wiccan, Buddhist, Hindu or Energy healing traditions, many of our healers were drawn from the Roman
Catholic faith, many being priests, bishops or lapsed priests now actively engaged in healing full time (Winchester Sawa, Doetzel, Maynell, Zembal & Motta, 2012). It was perhaps not surprising that the healers from the Roman Catholic faith believed that such healing as they could bring about was due to the healing power of God’s spirit, a spirit who they (the healers) felt as at best a conduit for. But the healers from most of the other traditions, Shamanistic, Aboriginal, Energy and Hindu for example, also saw themselves as a conduit of healing power or energy or spirit not their own. Indeed, only the Wiccan healer claimed to have healing power herself and to possess special abilities not related to a higher power as such.

On the other hand healers from non-Christian traditions did not speak of the intervention of the “Holy Spirit” or of God directly, but often referred more generally to the intervention of a “higher power”.

Energy healers often invoked a notion of “energy” which they sometimes claimed simply to be identical with the ordinary notion of energy as we find it referred to in contemporary physics (Winchester Sawa, Doetzel, Maynell, Zembal & Motta, 2012). This energy might be involved both in the process of diagnosis and in treatment, the patient’s energy conveying to the healer what was wrong and the healer’s energy passing to the patient and effecting healing and perhaps cure of the disorder claimed by the patient. We retain an open mind to these very diverse claims to special powers related either to long years of training or to their being in possession of special and unusual paranormal powers. Indeed, as mentioned above, only the Wiccan healer claimed to have healing power herself and to possess special abilities not related to higher power as such. While the Buddhist healer did not invoke a higher power, neither did he claim to be healing himself, but rather something more like leading the patient into a better path.
Discussion

Perhaps our most important findings were the distinctions we found ourselves having to make given the material at hand in the interview narratives (Winchester Sawa, Doetzel, Maynell, Zembal & Motta, 2012). First, we had to distinguish between healers telling us of those patients who were able to go on with their everyday lives after the healers’ interventions and those who we referred to as healed.

Second, we had to acknowledge claims to there being those who appeared to the healer to be free completely of their presenting symptoms and who they wished to pronounce as cured. Nonetheless, some of these seemed destined to spend the rest of their days living as if they were still in distress from their presenting ailment or complaint, for example, a now “cured” or completely removed cancer. However, the reverse was more often true, namely, that while the patient was rarely cured in a medical sense in that their presenting disease or disorder completely disappeared never to return, commonly they were able to go on with their lives as if the presenting disease or disorder was largely unimportant and no longer an impediment to living fully.

Third, it became clear to us that all of our healers worked with patients who came to them hoping to be healed and perhaps cured and that all of the healers had definite compassionate intentions to heal and perhaps cure. Thus we believe that the intentions of both the patient to be healed and the compassionate, loving intentions of the healer in the sense of caritas or agape are both crucial in the healing success of non-Western healing traditions. And a major part of this compassion was listening to and entering into the cultural world, the world of the deeply held beliefs, of the patient. The distinction between such healing by listening to and entering in to the world of the patient before offering advice or treatment that accepts and takes that world into
account and healing by the invocation of special and unusual powers of the healer appears to us to be central.

There was a meditative component in many of the interventions of our healers which paralleled in some respects the approach of the Aboriginal healers who had their patients enter into a dream world with them (Winchester Sawa, Doetzel, Maynell, Zembal & Motta, 2012). The invocation of prayer, of meditation, of breathing exercises, of relaxation and perhaps of hypnosis, seemed to us to be of this nature in the claims of many of our healers. We intend to study these claimed unusual, perhaps paranormal, powers more fully in future studies that will involve healers similar to those whose narratives we have just studied and are planning joint work with scholars in Indian and Israel as well as in Canada. In these studies, however, we will not simply ask the healers to tell their stories but will work with both healers and patients to follow their course of diagnosis and treatment by such healers, making sure that the lack of adequate prior diagnostic materials and medical follow up is not ignored.

Perhaps the most important result of our studies is that all of our holistic healers, from whatever tradition, listened carefully to their patients, attempted to understand and enter into their cultural heritage and world view, and offered suggestions and treatments with love and compassion that arose from that understanding (Winchester Sawa, Doetzel, Maynell, Zembal & Motta, 2012). If this approach could be encouraged in all of the next generation of physicians, surgeons and family practitioners coming out of Canadian medical schools, an improvement in patient health would most likely be made.

Finally, the suggestion of the Scottish Health Department (Chisholm, 2002) that further research should be undertaken to determine precisely which elements of spiritual care are effective will be at the centre of our future research undertakings in which we plan to work with
colleagues in India and Israel to engage in direct spiritual intervention in a variety of health related conditions (Winchester Sawa, Doetzel, Maynell, Zembal & Motta, 2012).
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Abstract

International travel has often been difficult for teacher education candidates who wish to become more globally prepared because their schedules are restricted by the requirements of a general education, certification requirements, endorsement coursework, and sometimes an additional major. Yet those students who are able to not only study abroad, but who can participate and teach in schools abroad bring a level of cultural clarity and sensitivity to their own future classrooms and students. This paper will report on a three-part, scaffolded system that has proven successful in supporting both an international student teaching experience and confronting the challenges that attend student teaching placements in general.

Introduction

With more and more institutions of higher education emphasizing global awareness and citizenship within their mission/vision statements, international travel by college students from America has tripled in the past 20 years (Redden, 2013). While this statistic is exciting, international travel has been difficult for teacher education students who wish to become more globally prepared because their schedules are restricted by the requirements of a general education, certification requirements, endorsement coursework, and sometimes an additional major.

For many teacher education students, study abroad means postponing graduation for a full semester. Yet those students who are able to not only study abroad, but who can
observe and participate in schools abroad bring a level of cultural clarity and sensitivity to their own future classrooms. For those students who can take a full semester, new opportunities are available through university-to-university exchanges, third-party placements, or international academic contacts. For those students who cannot take a full-semester, we have developed a model of student teaching in an international setting that has been both satisfying and successful because of a scaffolded-support system.

The purpose of this paper is to describe this three-part system that has proven effective in supporting both an international experience and confronting the challenges that attend student teaching placements in general. The student teaching placements described herein refer to ½ semester, second placement student teaching experiences: The first half of the semester, the student is placed within a “home school” placement in Iowa, USA. In the second half of the semester, the student is placed in Belfast, No. Ireland for either an elementary or secondary placement, according to his/her certification level and subject-specific endorsement(s).

In education, scaffolding refers to the strategy to “support a task in order to build a firm understanding that will eventually allow students to solve problems on their own” (Woolfolk, 2014). Like physical scaffolding that provides support during a project’s construction, this educational scaffolding is not permanent, but is a support measure during concept or skill development. Beyond support, educational scaffolding as a process and product is also valuable because it provides a focus on just that area that needs attention. As Wiggins (1989) states, “In the mass of information that students are exposed to, what the modern student needs is the ability to see how questions both produce and point beyond current knowledge.” Structuring support for observable behaviors that challenge student teacher education candidates to both learn and grow, therefore, must be consistent and reliable in order to maintain that emphasis. Moreover, in applying this model to an international setting, students must be able to rely on the knowledge they bring to the situation while moving beyond that knowledge to adapting to the reality of the placement. In this model, scaffolding is provided for teaching
proficiency, international travel logistics, and cultural responsiveness to provide for a successful and international student teaching experience as in the figure below.

Figure 1. International Student Teaching Model

Part 1: Teaching Proficiency

While teaching effectiveness depends on a teacher understanding human development and learning theory, subject-matter competency matters. Darling-Hammond (2006) asserts that subject competency “provides the foundation for teaching. This means that teaching strategies must be learned in the context of specific content” (p. 82). Teacher education institutions must insist that their teaching candidates have a depth of knowledge about their endorsement subjects, but also have the ability to select, organize, and develop curricular materials in those subjects so that they are themselves independent and continuing learners. When student teachers move to an international placement, they must be ready to recognize the similarities and differences in curricular approaches and be ready to create lessons from the resources at hand and/or through electronic sources.

Standards that define subject competency allow teaching candidates to identify the concepts to be stressed, but instruction and assessment are the means that promote
student learning of those concepts and comprise the purpose of teaching--learning. “Curriculum is the place where the learner and content meet” (Darling-Hammond, p. 82). So student teachers must be ready to use active learning strategies to both focus instruction and engage students in their own learning. This curricular intersection includes subject-matter knowledge, but it also entails pedagogical knowledge. A strong pedagogical knowledge “involves a knowledge of teaching about teaching and a knowledge of learning about teaching and how the two influence one another” (Loughran, p. 1180). This is more than a “play on words.” It means that student teachers need to intentionally seek out knowledge about and for teaching practice such as learning theories, models of teaching, and the psychology and philosophy of teaching methods in order to move beyond the “what” to teach and “when” to teach it, to the “why” of making instruction meaningful within the context of student preparation and location. For example, a “flipped” classroom may work very well within some US locations, but simply not be possible in a location where technology is limited.

Teaching proficiency is also enhanced by a student teacher’s management skills that reach out to each student while “managing” the group. Bill Rogers (2007) recommends that classroom management and discipline move from a punitive emphasis to one concerned with guidance and instruction. “It is the way we teach and enhance a social order where rights and responsibilities are balanced…Teachers should, and most do, make every effort to plan for a positive working environment” (p. 51). Correction that is paired with encouragement and self-reflection can be gained by learning management skills such as creating clear and brief instructions, using positive structures (“please do” instead of “don’t do”), learning students’ names quickly, using agreed upon signals, and focusing on behavior that has been disruptive instead of attacking a student personally. In any classroom setting, including international settings, student teachers must follow the routines and management policies of their mentor teachers, but the practice of positive discipline that emphasizes guidance in following those routines and policies is appropriate anywhere.

Finally, attaining teaching proficiency is dependent upon knowing how and when to adapt curriculum to fit student needs. Today’s classrooms hold challenges that a
diverse, heterogeneous group of learners bring that must be balanced with state and local standards and targeted expectations. The good news is that these standards and benchmarks create high expectations for all students, but the challenge is to help each student maximize their learning. Dr. R. L. Canady asserts there are three groups of students in a classroom:

1. A group of 25%-27% of student who learn “in spite of us” who do their work and have support of significant others.
2. A group of 15% to 25% of students who are identified as having some exceptionality and receive additional resources.
3. A group of 37%-50% who learn because of the teacher’s skills and efforts who create appropriate instruction and assessment aligned with standards.

Gregory & Chapman, 2007, p. 5

A differentiated classroom is one in which curriculum adaptations are made to meet the unique needs of students so that 100% of the student have the opportunity to learn. These adaptations may be made in content, assessment tools, performance tasks, or instructional strategies (content, process, or product), but teaching proficiency now must incorporate strategies to differentiate instruction so that teachers use processes that are best suited for students.

Scaffolding Support for Teaching Proficiency

In order to support teaching proficiency so that the student teaching experience is indeed the capstone movement from student to teacher, a teacher education program can stress conceptual as well as pedagogical knowledge beginning with recruiting first year students to senior clinical experiences with the following actions.

1. Emphasize the importance of InTASC Teaching Standards as well as national standards for content areas from the very beginning of the program. These standards are then distributed across program courses and aligned with target assignments and assessments. A student must received a “C” or better on assignments to meet the standards. If a student does not meet a standard within a course after remediation, the student fails the course. While this may seem harsh, it is both a motivating tool and
support for students as they are offered remediation as a carrot and know that they will have to retake the course if they do not meet the standards required.

2. Define endorsement areas so that content areas both meet national standards and go beyond state minimum requirements to establish credibility and expertise that creates a level of confidence and comfort when teaching. Students must pass all endorsement courses with a “C” or better or retake the course. Like the InTASC Standards that are met in education courses to ensure pedagogical competency, subject-matter competency is established by completing all endorsement courses (including advanced courses) with a “C” or better. This emphasis on academic rigor is a part of preparation for international study as well. Students must have a 3.0 or better grade point equivalent and have met all teaching dispositions before they would be approved for international study. Those students who do go abroad represent their programs and university as well as themselves and must evidence a critical approach to thinking and learning.

3. Create clinical practice for students throughout their programs from the first year to the student teaching semester. A typical student in our program does 100-120 pre-student teaching hours in a diverse range of schools. In this clinical practice, students are expected to evidence growing pedagogical skills, but they are also assessed on specific behaviors that are aligned to our three main teaching dispositions: Learning Leader, Student Advocate, and Reflective Practitioner.

4. Establish benchmarks for teaching dispositions. At different points in their program, students are asked to rate themselves in their attainment of dispositional behaviors and form a goal for the next semester about those teaching dispositions. Mentor teachers in K-12 classrooms as well as faculty members also assess each student’s behaviors that evidence teaching dispositions.

5. Empower students to explore management techniques by having them create a classroom management plan for their future classrooms and practice strategies as part of clinical experiences.
6. Require teaching candidates to employ differentiated instruction. Teacher education students are required to develop and implement differentiated learning lesson plans in their methods classes, so they will be prepared to help each student learn.

7. Define program expectations clearly so that student teachers will know what is expected of them in the international site.

8. Place student teachers in a home site student teaching experience for ½ semester before they go abroad to ensure that teaching competency has been reached before they enter international classrooms.

**Part 2: International Travel Logistics**

Just as teaching proficiency is an evolving and continuing pursuit, the actual travel and on site living arrangements for an international student teaching assignment needs to be supported through pre-departure preparation and sustaining activities while abroad. Supporting student teachers through international travel logistics recognizes that college/university students experience stress in their modern lives; moreover, international travel, while exciting, also produces what researchers are labeling “acculturative stress” (Yu, et al. 2014). Yu et al. verified seven acculturative stress subconstructs as students traveled to a culture different than their own: “rejection, identity threat, opportunity deprivation, self-confidence, value conflict, cultural competence, and homesickness…. Acculturative stress was more common among international students who were not well prepared, married, and belonged to an organized religion” (p. 1). The first of these subconstructs are external: rejection, identity threat, and opportunity deprivation. The next three subconstructs—self-confidence, value conflict, and cultural competence—are intrapersonal. The last subconstruct, homesickness, is a broader category that, if reduced, does not tend to lower the stress in the other areas. In addition to these measures of stress, American students are also confronted with different currencies and converting dollars to those currencies, the necessity of a passport to travel relatively short distances, and differing visa requirements.
While acculturative stress is real, it does not mean that international travel and study should be avoided. Preparedness has long been recognized as a preventative measure of acculturative stress (Park & Rubin, 2012) and as a means of reducing interpersonal anxiety that is often an outcome of stress.

**Scaffolding Support for International Travel Logistics**

Preparing for the logistics of international travel for student teaching begins at least a full semester before the travel is to take place so that careful planning reduces stress through the following steps.

**Predeparture:**

1. Check transcripts, grade point, and disposition assessments to make sure students are eligible for international travel.
2. Help students understand and complete all paperwork required by the university for international travel.
3. Encourage students to meet with a financial aid officer immediately so that distribution of financial aid and scholarship monies while studying abroad is understood by all.
4. Provide third-party contact information if the placement would be made through a third party.
5. Set a deadline for acquiring a passport and an appropriate type of visa and provide web links that are available 24/7 for students to access these services. For example, students going to Belfast, No. Ireland can either process their visas themselves by going to the following website: [https://www.visa4uk.fco.gov.uk/](https://www.visa4uk.fco.gov.uk/) or they can go through Perry International ([www.perryvisa.com](http://www.perryvisa.com)) for visa processing at [http://www.perryvisa.com/visaRequirements/United%20KingdomStudentUSNew%20York.php](http://www.perryvisa.com/visaRequirements/United%20KingdomStudentUSNew%20York.php)
6. Help students choose courses that have been articulated in the past or can be articulated to courses in their programs.
7. Ensure that international placements are grade and subject appropriate so that the student teacher can be assured of reasonable teaching assignments.

8. Facilitate students’ background checks so that they might enter classrooms on site.

9. Encourage students to obtain an International Student Identity Card (ISIC) at http://www.isic.org.get-your-card The ISIC can be valuable when studying abroad. It is recognized worldwide and immediately proves that a student is eligible to receive available discounts on travel, accommodations and admission to museums, theaters and other cultural activities in more than 90 countries. It offers savings of up to 50% over commercial fares on intra-European travel and many other benefits, including illness and accidental death insurance coverage. Additionally, a 24-hour help line is available to holders of the ISIC.

10. Tell students to register with the US State Department to enroll in the STEP Program (Smart Traveler Enrollment Program). This is a free service that allows U.S. citizens traveling abroad to enroll their trip with the nearest U.S. Embassy or Consulate. This service also provides travel warnings and notifies U.S. citizens/nationals in the event of a disaster, emergency or other crisis, as well as plans for evacuation coordination. The U.S. Department of State is committed to ensuring that any personal information received by our overseas U.S. Embassies and Consulates pursuant to the STEP process, whether in person or otherwise, is safeguarded against unauthorized disclosure.

11. Review with students the Traveler’s Health information for the site to which the student is traveling at http://wwwnc.cdc.gov/travel

This site contains useful information about packing for one’s health and safety, and has generally good tips such as bringing an extra pair of glasses, health documents, first-aid kits, medical supplies, and supplies to prevent illness or injury.

12. Confirm housing arrangements and set up a communications link between the host institution and the home institution.

13. Hold a departure meeting one week before departure to check through 1-12 and answer any questions that may linger.
**Post-departure and On-site Communication**

1. Confirm the safe arrival and housing accommodations with students after they arrive via email.
2. Confirm that in-school placements reflect assignments that have been communicated earlier via the Internet.
3. Continue weekly logs from students in which they are given prompts that encourage reflection, goal setting, and sensitivity to diversity via Discussion Boards in Blackboard.
4. Collect beginning, middle, and ending blog entries from students that shares their experiences with their home school classmates and future student teachers who can gain vicarious experiences via the Internet.
5. Foster the completion of student teachers’ electronic portfolios via LiveText software.
6. Coach student teachers through any problems through electronic office hours.
7. Maintain communication with International supervisory contact.

Upon return, graduating student teachers are invited to share their experiences with classes and through their published blogs and to evaluate their international experiences so that the program can continue to build on success and improve where needed. Students who have had this experience also help to recruit students for future international placements.

**Part 3: Cultural Responsiveness**

The third part of preparing and supporting teaching candidates to student teach abroad is developing cultural responsiveness. Conway and Clark (2003) suggest that student teachers engage in a journey outward as they develop, but “they also have a journey inward when considering the self during the period of student teaching” (p. 98). Part of this inward journey is facing ethical decisions in the classroom and developing cultural responsiveness. Because culture is central to the way we communicate and receive information, student teachers must be ready to acknowledge and react respectfully to
students’ cultural background wherever they teach. Teachers in the United States face the reality that many of their students come to them with ethnic, linguistic, racial, and social class backgrounds that are different from one another and different from the student teacher. In an international setting, these differences may be even further marked. Cultural responsive or cultural relevant teaching was first espoused by Gloria Ladson-Billings in her seminal publication, *Culturally Relevant Teaching: The Key To Making Multicultural Education Work* (1992). Teachers who are culturally responsive use their students’ cultures as vehicles for learning and create a meaningful bridge between the home and school. In an international setting, study of the culture one is moving into is vital to connecting to students and creating or maintaining a community of learners. Accepting the new community and attending community events, studying the history of the new community, and avoiding comparisons with one’s own home community is culturally validating and enables international student teachers to make the inward journey valuable.

As international student teachers work hard to relate to their students and their students’ culture through culturally responsive teaching, they also face the stress of being separated from their peers and their own culture. For almost four years these student teachers have been part of an American college/university experience with its academic, social, emotional, and networking experiences that have led to their personal and professional growth. When the initial excitement of an international placement starts to wear off, these student teachers find themselves outside the normal rhythm of their days and may experience a type of homesickness that is related to their own culture and peers rather than a fixed location. Little luxuries such as unlimited ice, unlimited texting and phoning, and frequent showers that are not always available in international settings can become major issues unless international student teachers have been prepared for their new environment.

Finally, student teachers in an international setting have a unique opportunity to develop professional relationships with other teachers, administrators, and students internationally and to bring a differing worldviews back to their future classrooms in the United States with an ethnorelative view. Bennet & Bennet (2001) name acceptance,
adaptation, and integration as elements of ethnorelative thinking wherein a worldview is seen as a complex combination of worldviews that moves a teacher toward intentional changes that seek intercultural relationships rather than avoid them. Such relationships must always be sought and maintained at the professional level with sensitivity to varying administrative organization and cultural channels of communication.

**Support for Cultural Responsiveness**

In her book, *Culturally Responsive Teaching*, Geneva Gay asserts many educators believe that good teaching “transcends place, people, time, and context. They contend it has nothing to do with the class, race, gender, ethnicity, or culture of students and teachers” (p. 22). Yet individuals’ characteristics that name their gender, race, ethnicity, etc. are deeply embedded in their individuality and affect their learning. For example, promptness, attention, and eye contact can be influenced by cultural norms and lead to judging students as deficient and in need of “fixing” when they are simply conforming to social/cultural influences. A teacher cannot know all the cultural influences of his/her students, but a teacher can develop the sensitivity to place and people and investigate the cultural differences among his/her students as well as be awareness of one’s own cultural influences. To this end, our Teacher Education Program has done curricular mapping of 12 different characteristics of difference: English language learning, race, talented and gifted, at-risk, ethnicity, LGBT orientation, gender, sex, socio-economic-status, religion, immigrant status, and IDEA special needs designation. Each of these characteristics are “strongly addressed” at least twice within the education program through experiences that are multidimensional and may be identified as active learning measure, simulations, experiences with debriefing activities, or in-depth student reflections. They are also “addressed” in multiple courses by creating awareness through classroom discussion, activities, or authentic intellectual work.

International student teaching cultural “homesickness” and stress can be lessened through weekly coaching contact with university personnel at their home university. While phoning and texting frequently is very expensive from an international site, most international placements offer Internet services by which students can keep in touch. Asynchronous Internet communication also supports communication even though the
parties are in widely disparate time zones. We also publish three blog entries from student teachers abroad that are available to their friends and family back home. These blog entries are written by the student teacher, but edited by university personnel to make sure that they are ready for public presentation before they are published.

International professional relationships are encouraged by collaborating with the host institution to place student teachers’ living spaces in close proximity to student teachers from other countries so that students who have student taught abroad carry forward the experiences and connections that they have made. The electronic portfolios that students prepare as they graduate often carry reference letters from their international supervisors and mentor teachers which then offer a unique perspective on a teaching candidate’s potential for future employers. Ceremonies that mark the end of the student teaching experience at the international site have also be helpful and providing an institutional “home” away from home.

**Summary**

While teaching as a career is interesting, complex, and rewarding, it is also a career that engenders stress and anxiety for novice teachers which, in turn, necessitates support. The confidence and self-efficacy that is apparent in teacher leaders evolves from experience as well as education. However, in her study of student teachers and stress, Melissa Kelly (2014) states, “student teachers do not have the benefit of years of experience to help them deal with day-to-day classroom issues” (p. 1). These issues can be exacerbated by placements in international settings where travel logistics and cultural differences generate additional pressures when implementing educational knowledge, gaining experience, and learning in order to create a professional future. Scaffolding support through program preparation, meetings, materials, and technologies cannot alleviate all stress, but these supports can lessen the fear of the unknown and provide a coaching presence for student teachers as they gain confidence and independence performing as proficient and culturally responsive teachers in an international setting.
References


TITLE: Keeping Students Engaged Through Outreach Education: Going the Distance

TOPIC AREA    Rural Education

DESCRIPTION    Students who display chronic absenteeism often lose a semester or an entire school year. Typically, these students are given teacher-made materials or distance education modules in an attempt to keep them on track to graduate. However, once these students leave the physical building, they often become further disengaged and withdraw from school. The Going the Distance school completion program combines the expertise of teacher, social worker and community to re-engage lost students.

Author(s)

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Tracy is both a teacher and a social worker. She completed her MSW in clinical social work at Wilfrid Laurier University. Tracy has over twenty years of experience as a counsellor in multiple settings including family counselling programs, post-secondary schools and outreach programs. Tracy is currently working towards her Doctorate of Education in Distance Education at Athabasca University.

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Patricia has worked as a teacher, guidance counsellor, and school administrator for a total of 30 years with students from kindergarten to grade 12. Pat is currently the Principal of the Drayton Valley Community Outreach School and is working at developing a strong support system for at-risk students from grades 7-12 designed to ensure academic success.

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Keeping Students Engaged Through Outreach Education: Going the Distance Program

Overview:

Students who display chronic absenteeism often lose a semester or an entire school year. Typically, these students are given teacher-made materials or distance education modules in an attempt to keep them on track to graduate. However, once these students leave the physical building, they often become further disengaged and withdraw from school. The Going the Distance school completion program combines the expertise of teacher, social worker and community to re-engage lost students.

Background:

In December of 2011, the Going the Distance school completion program was born. The program arose out of observations that students displaying high absenteeism who were sent home with distance education materials or teacher made materials were likely to fail their semester or withdraw from school.

The Going the Distance school completion program provides a service for junior and senior high students of the Wild Rose School Division who cannot be adequately served in their current school environment and whose semester or school year completion is at risk. This may be due to behavioural or mental health reasons, as a result of a threat or complex needs assessment or because of physical health problems or a planned medical absence. The initial indicator for referral consideration is often a high rate of absenteeism from school. The Going the Distance Program has three core components; a relationship component, an academic component, and a community component. Students, and their guardians, agree to participate in all three program components in order to be a part of the program.

The Relationship component of the Going the Distance Program recognizes the importance of students having connections, or being engaged with, their school and community. We also acknowledge that a positive one-to-one relationship between a teacher and student is a powerful predictor of future academic success. To this end, students have daily contact with their program teacher via text messaging or emailing. Home visits and site visits to schools or other places of study are also made. Students can also choose to study at one of our two outreach schools.

The Academic component of this program makes use of “team-taught” distance education courses offered through Alberta Distance Learning Centre. Our teachers use these on-line and print courses and as team teachers, modify and mark according to the students’ needs. We are able to give students credit for what they have accomplished prior to leaving their home school so that, for them, less is lost.

The Community component of the Going the Distance Program recognizes that many children and their families need more than academic support. The social worker/case manager of the program assists students and their families to access a variety of programs available in their community and well as being a support to students and their families. Examples of community services accessed by students are Alberta Mental Health Services and McMan’s Parent Place. All students in the Going the Distance program either volunteer in their communities or participate in work experience.
Scenarios

1. Scott is a Grade 9 student who was referred because of school absenteeism due to anxiety. To date Scott is passing LA, Math and Social Studies courses and is a regular volunteer at the Good Samaritan Society both in the kitchen and recreation services. Although Scott is meeting regularly with the program social worker, we are looking for community supports to address Scott’s anxiety.

2. Haylee is 16 years old and a young mom. She is supported through our program and comes in regularly to Visions West Outreach School so she can have some dedicated time to do her schoolwork. Hayley has made arrangements for babysitting and we support her with transportation when her arrangements fall through. This arrangement has resulted in much greater academic success for Hayley who is in a combined grade 9/10 program. She is also has a mentor through McMan’s family services; a volunteer mom who keeps in touch with Haylee. The Going the Distance teacher and social worker make periodic visits to Haylee’s home.

Challenges

- Reaching students who exhibit school refusal behaviour (no wish to continue in school, externalizing disorders such as Oppositional Defiant Disorder or Conduct Disorder) as opposed to school avoidance (chaotic life circumstances, internalizing disorders such as anxiety or depression).
- Helping students see mental health services as a valuable option for support.

Summary

The Going the Distance school completion program endeavors to meet the needs of students with high absenteeism rates through a teacher, social worker and community collaboration. Students participate in all three components of this program including a relationship, academic, and community component. Of these three components, the relationship component is key. It sets the stage for student success in all components and is essential for student retention.
PANEL SESSION PROPOSAL TITLE PAGE

TITLE   Improving Life Chances Through Community Partnerships: A Wrap Around Approach

TOPIC AREA Rural Education

DESCRIPTION Students with behaviour challenges or mental health issues are not often successful with supports typically offered in schools. To improve the life chances of these students’ educators joined professionals from local community services, students’ and their families in a collaborative and solution focussed process. Keeping “what’s good for kids” as the guiding compass ensures participants think outside of the box to find creative solutions to complex problems.

Author(s)

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Kathy has been an educator since 1983 and is passionate about kids. Throughout her career, she has been a teacher, vice principal, Program Unit Funding Coordinator and is currently the Director of Student Services for Wild Rose School Division. She completed her Masters of Education in Special Education through Flinders University.

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Darlene Ferris ( B.Ed., M.Ed.) Director of Wellness, Wild Rose School Division

Darlene has a Masters degree in Child and School Psychology from University of Calgary. Darlene has taught for the Faculty of Early Childhood at Red Deer College for ten years, taught in the public system K-12 for nine years and is currently the Director of Wellness for Wild Rose Public Schools in Alberta.

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Overview:
Supporting students with behavioural challenges is not easy once school based strategies and resources have been depleted. Educators often ask themselves, “What else can we do?” Wild Rose School Division found that keeping “what’s good for kids” as the guiding compass and inviting community stakeholders into a collaborative process proved to be beneficial to students and their families.

Background
Historically, students with behavioural challenges who were unsuccessful in a traditional educational setting were provided with modules from the Alberta Distance Learning Center to work on independently at home. Although this met the requirements of The Alberta School Act by providing alternate programming, the approach was less than successful since completing these modules required students to work independently and to be self-motivated; two of many skills that are usually lacking in students with behavioural challenges.

The direction taken by Wild Rose School Division has been to organize a collaborative process involving the student and their family, representatives of the school and Child and Family Services, the School Resource Officer, Mental Health Therapist and any other resource that may benefit the student or family. Each meeting begins with the student and/or family expressing their hopes and dreams for the student’s future, highlighting the student’s strengths and motivating interests. Next, the family is asked to identify the steps needed to make this dream a reality. Together the student and family identify all barriers and challenges that are impeding the success of the goal. Once a goal and barriers have been clearly identified, the team collaborates with the student and family to see what resources are available to them and develop a plan of action. This solution-focused conversation not only supports the student and their family but also takes pressure off of the school with its limited resource base. The discussion that encourages teachers and leaders to focus on improving the life chances of their students rather than just test results promotes a willingness of staff to think outside the box and come up with creative solutions.
A Case Study:
When a grade 8 student with severe behavioural challenges was expelled from school, “Make this look different” was the direction Brian Celis, Superintendent of Wild Rose Schools gave to the Student Services Department. A meeting was organized with various community and school stakeholders including representatives from the school, District Office, High School Outreach, Mental Health, Mental Health Capacity Building pilot (MHCB), Family Wellness Worker (FWW), Family Community Support Services (FCSS) and the parents of the student. These stakeholders demonstrated a high level of commitment as well as great synergy and the result was an excellent example of what “wrap around” services could, and should, look like. The resulting program was multi-faceted and included: a Teaching Assistant accompanying the student to the Outreach School to work on curricular work under the supervision of the teacher; if the student’s anxiety level increased, arrangements were in place access work experience at the local pet shop; daily physical activity was provided by the MHCB Coordinator who met the student every morning to work out in the local gym; a division trustee secured the support of a local pilot who agreed to take the student on weekly flights; social connections were maintained with a specific peer who met to work on a collaborative project. The Mental Health Therapist advised the Family Wellness Worker and Outreach staff on how to prepare other students for working alongside this explosive student. The Mental Health Therapist continued to support both the student and the family on an ongoing basis. The mother of this student agreed to attend the Outreach to provide support in the afternoon if this need arose. Although it wasn’t without its challenges, this “community” approach to providing support for a student in need allowed the student to complete the grade 8 curriculum while remaining semi engaged and connected to his home school and community. Today this student has been successfully reintegrated into a regular high school program and is on track to graduate in June 2015. As a result of this success story, Wild Rose School Division has adapted this model to successfully support many other at risk students.

Challenges
- Maintaining social connections once a student has been removed from an integrated school setting is difficult. Reliance upon the family to ensure this occurs outside the school day has been somewhat successful.
- Family following through on expectations can at times be a challenge even with the support of the team.
• Buy in from all community stakeholders can be difficult. Collaboration is a voluntary process and working to grow team members takes time.

Summary:
Working together and maintaining a commitment to improve the life chances of all was not as difficult as initially perceived. Maintaining a focus on the right things, collectively accepting responsibility for all students as a community, and committing to making it work, we found that we were better able to provide effective and meaningful supports for all of our students.

(To access the full story on the above please case study, access the following link: http://www.cass.ab.ca/cass_connection_magazine1, pages 20-21, (Spring, 2011).)
TITLE: Supporting Student Wellness and Achievement through Family Wellness

TOPIC AREA: Educational Psychology

DESCRIPTION: Students who struggle at school often come from families who are struggling in the home. Supporting students in isolation of their families although expedient is not always effective. Hiring Registered Social Workers instead of teacher counselors allow schools to support student wellness and achievement in a more holistic and family oriented approach.

Author(s)

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Darlene has a Masters degree in Child and School Psychology from University of Calgary. Darlene has taught for the Faculty of Early Childhood at Red Deer College for ten years, taught in the public system K-12 for nine years and is currently the Director of Wellness for Wild Rose Public Schools in Alberta.

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Kathy has been an educator since 1983 and is passionate about kids. Throughout her career, she has been a teacher, vice principal, Program Unit Funding Coordinator and is currently the Director of Student Services for Wild Rose School Division. She completed her Masters of Education in Special Education through Flinders University.

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Supporting Student Wellness and Achievement through Family Wellness

Overview:

Students who struggle at school often come from families who are struggling in the home. Supporting students in isolation of their families although expedient is not always effective. Hiring registered Social Workers allow schools to support student wellness and achievement in a more holistic and family oriented approach.

Background:

Four years ago Wild Rose School Division had access to only 3 community family wellness workers. These three workers were responsible for 17 schools and three alternative programs that served approximately 5100 students and their families. Over the past three years WRSD has assumed responsibility for the administration and supervision of the program and has grown it to include twelve workers. The program serves the communities of Rocky Mountain House, Drayton Valley, Caroline, Leslieville, Condor and Breton. In 2012-13 school year, the Family Wellness Program provided continual support to 560 individuals and families. Statistics for 2013-2014 school year shows an increase in workload to 1035 individuals accessing regular support and many others seeking a one-time emergency consultation.

The Family Wellness Program provides support to children, youth and families to assist them in reaching their potential both academically and personally. The Family Wellness Workers are available to enhance the development of a student’s educational, social and emotional experiences. They are able to provide assistance to students on an individual basis and may also facilitate group sessions dependent on the needs of individual schools. Workers are able to support clients through home, school or offsite visits. The program is a link to a variety of community agencies and advocates effectively in support of students and their families.

In collaboration with community partners and examining statistics, Wild Rose School Division recognizes the importance of providing the proactive support of Family Wellness Support when approaching mental wellness. According to Alberta Health Services statistics each year over 500,000 Albertans receive at least one mental health service from a physician. In a three-year period, over 33 percent, or one in three Albertans receive at least one mental health service from a physician. These rates are underestimates of the prevalence of mental health problems because they do not reflect the services that some individuals receive services from private providers. Further, preliminary results of a recent Alberta Report found that suicide rates for youth under the age of 18 more than doubled in the last year. Suicide is consistently a leading cause of death among Albertans. The importance of healthy mental development for our children and youth cannot be overestimated.

The Family Wellness Program is a crucial component of Wild Rose School Division’s wellness programming and is critical to our communities at large. Family Wellness Workers provide a majority of the school-based counselling services, which are not available through regular academic programming.
The Family Wellness Program would not be possible without funding and support from CFSA, Town of Drayton Valley, Town of Rocky Mountain House, Clearwater County, County of Brazeau, Red Deer Catholic Schools, Rocky Mountain House and Drayton Valley FCSS. Through these partnerships, and continual consultation with Alberta Mental Health, we are better able to foster safe and caring environments within our schools and throughout our communities.

Family wellness program goals align with the Alberta social policy goals in that they strive to protect the vulnerable. Family wellness workers assume the role of advocates for our youth and families who need help. The ultimate goal of a family wellness worker is to empower the individual to take control of their own lives and pursue goals that will fulfill their life and be successful in the community. Through education and community partnerships, individuals are given the skills and knowledge that they need to develop healthy and strong relationships. In our journey collaboration and partnerships have been crucial in developing our program to ensure that we meet the needs of both the individual and our community. Our partnerships with Children and Family Services, Royal Canadian Mounted Police and Alberta Health Services have been instrumental in moving us forward. Family wellness workers regularly access these partners for informal consultation as well as more formal Wrap-Around Meetings for more complex cases.

Our family wellness program also operates under the guiding principles of being flexible and responsive. This means that the program is set up with a person centered approach where flexibility involves being able to do what is necessary in a timely fashion as well as working with families that have children of all ages not just school-aged. Responsiveness includes providing short-term counselling and support or working with families to remove barriers in order for them to access other services. The family wellness worker ensures the most efficient and effective delivery of services for families by identifying and eliminating overlaps and gaps to make the best possible use of community, school and government resources. Family workers need to work where the children can access them and thus are primarily located in schools however they also work in community facilities, recreation centers, hospitals, or wherever else might be convenient for the individual.

Mental Wellness is a priority of Wild Rose School Division and as a result has hired a Director of Wellness to plan, monitor and supervise all of the division’s wellness initiatives. As a division we are talking about mental health openly and finding ways to get to students and families sooner. Throughout our division and our family wellness program our aim is to preserve dignity and instill hope.

The Outcomes of Family Wellness (Social Workers) in our Schools

- Family wellness workers address the entire family and do not treat the child as an isolated entity unaffected by its surroundings
- Family wellness workers work with clients in the surroundings where they are most comfortable (home, school or community)
- Family wellness workers make home visits; a lot is learned about a family situation by visiting the home
- Family wellness workers advocate for the family; sometimes when they advocate for the best interest of a child it will be against what the school is wanting
- Family wellness are able to take parents/clients to medical appointments including family doctors, pediatricians and mental health therapists
• Family wellness workers are able to follow the child to other institutions to help with transition, in past we have had our workers go to group homes in Edmonton, new schools, post-secondary institutions and even psychiatric hospitals.
• Family wellness have accompanied families to hospitals for emergency care for issues including suicidal ideations and other mental health
• Family wellness workers attend inter-agency meetings in their respective communities thus collaborate with and are connected to local referral sources
• Family wellness workers fulfill a community component; some offer parenting classes, Roots of Empathy Coordination, Community Family center operations, Boys and Girls Club, Mentorship Programs, Community Programs such as Go Girls, Safety Day Presentations
• Family Wellness are not a member of the teachers’ association and follow a Code of ethics developed by the Alberta College of Social Workers
• Family Wellness Workers are not tied to one school and can see students from the same family who attend different schools and get a bigger picture of what’s happen for the children and families
• Also since workers are not tied to one school if one case warrants a male worker or a female worker we can certainly accommodate.
Abstract

Activity theory (Engeström, 1999, 2001) views human activity as a system where agents (individuals) transform objects into outcomes mediated by tools through interaction with community (a group with a shared goal), rules, and division of labor (task divisions, power, status). Moreover, all activity systems are a part of a network of activity systems. This holistic and collective view of human activity has been increasingly applied in second language learning research. Furthermore, a core principle of activity theory that contradictions and tensions within and between activity systems serve as a driving force for learning and development is relevant to teacher development. The purpose of this paper is to analyze accounts of writing center tutors’ tutoring practices from an activity theory perspective and offer designs for a program that contributes to improving tutors’ professional development.

Primary data in this study consist of interviews with graduate student tutors of English writing in two university writing centers in Japan. Eight Japanese and non-Japanese tutors participated. The primary data were complemented by additional data including observations of tutoring, interviews with the writing center directors, and informational documents about the writing centers in which participants worked. These qualitative data were analyzed inductively against activity system components, activity system networks, and systemic tensions discussed in the source literature (e.g., Roth & Lee, 2007).

Preliminary analysis indicates that tutors’ tutoring practices can be effectively understood through an activity system, in which tutors (agents) work on objects/goals (e.g., the improvement of students’ writing and learning) through mediating tools (e.g., tutors’ own disciplinary and writing expertise and prior writing experience, and shared information and concerns with other tutors). In each activity system, various tensions (e.g., between students’ requests for proofreading and writing center rules against it) contributed to tutors’ development as they approached the tutoring strategically in order to resolve those tensions. Furthermore, tensions between interacting activity systems (e.g., writing center tutoring and students’ learning in regular writing classes) gave tutors an opportunity to see students’ learning from a larger perspective and thus facilitated their professional development. These findings reveal the robustness and usefulness of activity theory both as a
theoretical and an educational framework.

Based on the findings, suggestions for program design that contribute to tutors’ professional development are offered. Those suggestions emphasize raising tutors’ awareness about their prior engagement in writing practices and observations of students’ learning outside the tutoring context so that tutors can understand their work in a network of various interacting activity systems. Moreover, the suggestions help tutors develop tutoring strategies based on each component in the tutoring activity system.
Title:
Self-Efficacy Expectations of Primary School Children with regard to Specific Aspects of their Pragmatic Competence

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Summary:
Self-efficacy is an important field of school research since it has an influence on the motivation and the level of perseverance when obstacles occur. As self-efficacy is related to academic performance it is indispensable to understand its mechanisms. This study deals with self-efficacy beliefs concerning the pragmatic competence of primary school children. As language is one factor for explaining unequal educational opportunities, the study aims to identify areas of communication children perceive as manageable or challenging.
Abstract

Introduction: Self-efficacy beliefs refer to individuals’ conviction to complete given tasks at designated levels. It is an important field of school research, as it has an influence on the students’ motivation to engage in a new task and the level of perseverance and resiliency when obstacles occur. This self-assessment does not only have an influence on the students’ achievement potential but it is also influenced by the academic performance and the teacher’s assessment (Kaya & Rice 2010). Self-efficacy expectations can be developed on a universal level, indicating an individual’s degree of confidence about the probability to master any kind of difficulty being faced with in life. Yet, the concept has more predictive efficiency when focused on a particular task or field of competence (Bandura 1998; Mutlo et al. 1991). When it comes to the question of gender differences among primary school students, the majority of studies does not find evidence for these differences. For example, although girls are judged superior writers, girls and boys do not differ in their perceived competence (Pajares et al. 1999; Pajares & Valiante 1999). But it is believed that differences begin to emerge during the age of adolescence (Schunk & Pajares 2001). In contrast, the socioeconomic status (SES) of the students does seem to have an impact on the self-efficacy beliefs of students: A low SES is presumably leading to weaker self-efficacy expectations (Pintrich & Schunk 2002), as parents in these cases are often not able to provide a stimulating learning environment or to get their children involved with motivated peers (Bong & Skaalvik 2003; Schunk & Pajares 2009).

At the beginning of primary school children mostly feel overconfident and highly efficacious about succeeding in a challenging task. They are often lacking task experience and peer social comparisons, which is why their accuracy for self-assessment is just being developed towards the end of primary school (Schunk & Pajares 2001). In addition, at the end of primary school students are being more and more provided with feedback of the teacher concerning their level of performance. The highly selective German school system leads to the students’ allocation to different types of schools after primary education, differentiating into schools for weak and strong learners. This early allocation gives students a straight feedback regarding their academic performance and often leads to a decline of the students’ confidence (Buff 1991).

As accuracy of self-assessment is often not thought to develop until fourth grade, only a small number of studies focusing on primary school students can be found. The number of studies in this target group is becoming even smaller, regarding the field of language competence, although language is one major factor leading to success in primary school and setting the course for the whole school career. Especially research on self-efficacy in the linguistic field indicates that the self-perception of competence is related to the actual academic performance. Writing self-efficacy beliefs of primary school students for example predict the actual writing performance (Zimmermann & Bandura 1994; Pajares et al. 1999). Regarding reading self-efficacy beliefs of primary school students, they were found to be reciprocally related to the level of reading fluency (Quirk et al. 2009). As current studies
mostly focus on self-efficacy beliefs regarding reading and writing skills, this paper focuses on the research desideratum of pragmatic competence. It is defined as an assessment of the current communicative situation and the decision to choose a certain verbal strategy in order to reach a communicative intention (Ingendahl 1975). The theory is located on a meta-level, as it describes the reflection of the situation, the evaluation of the conversation partner with his or her requirements and expectations and the consideration of the individual linguistic repertoire available. Pragmatic competence is part of the language acquisition process and is not completed by the time children enter school as the new conversational situations in school are part of this process.

**Research Objectives:** Introducing pragmatic competence as a new research area in the field of self-efficacy, the paper intends to reveal how primary school children in fourth grade perceive their pragmatic competence. According to the above presented state of research, it will be examined if there are gender differences or differences resulting from the students’ SES regarding the level of self-efficacy beliefs in order to detect possible risk factors. As there seems to be a correlation between self-and external assessment, different forms of external assessment in school will be examined: Correlations between the level of self-efficacy and the students’ grades in German class, as well as their tracking recommendation for secondary school will be analyzed. In addition, correlations between the students’ self-efficacy and the teacher’s assessment of the students’ pragmatic competence will be analyzed. Furthermore, it is worth examining individual problems students have with certain communicative situations to detect challenging communicative situations from the children’s perspective.

**Proposed methodology:** The main method to identify self-efficacy with regard to pragmatic competence is a newly implemented questionnaire consisting of a four-point likert-scale. The scale was piloted and reviewed before it was implemented in the main sample of 444 students. In addition the teachers were asked to provide information about the students’ last grade in German class, as well as their tracking recommendation for secondary school. In order to detect possible correlations between self- and external assessment, they were also asked to give an external assessment of their students’ pragmatic competence on a four-point scale (from very low to very high). The scale and teachers’ information are analyzed quantitatively. Apart from multiple choice items the questionnaire consists of open questions, describing specific communicative situations, asking students how they would communicate in the given situations and asking them to indicate what they perceive as challenging. These questions are analyzed qualitatively.

**Expected outcomes:** First analyses show that the internal consistency of the implemented scale is satisfying, having a Cronbach’s Alpha of .78 for self-efficacy concerning pragmatic competence. Reflecting the majority of studies about self-efficacy (Bandura 1998; Schunk & Pajares 2009), it is hypothesized that most children will have high self-efficacy expectations but there will probably also be a number of children with low self-perceptions. It is worth examining to what extent these children differ from each other in terms of academic achievement or tracking recommendation. This will also
indicate if the children are aware of the highly selective structures in the German school system. Conceivably there is an effect similar to the *Big-Fish-Little-Pond Effect*, as it is described in the theory of self-concept. As research indicates that the teachers’ assessment of their students is often not appropriate (Spinath 2005), it will be examined if there are correlations between the internal and external assessment in my sample. From a qualitative perspective explanatory patterns will be identified to help understanding the strengths and weaknesses primary school children perceive concerning their pragmatic competence. The mixed methodology in this research helps identifying structures that influence the level of self-efficacy and it also gives an insight into students’ individual explanatory patterns.

**References:**


**Title:**
AMP Teacher Leadership Academy - Creating a Teacher-Led Model of Ongoing Professional Growth

**Topic Area:**
Mathematics Education

**Presentation Format:**
Poster Session

**Presentation Description:**
Instructional leadership promises meaningful opportunities for impacting cultural and pedagogical change from within the classroom. Teachers serve as researchers, mentors, and facilitators of professional development as master teachers.

The Arizona Mathematics Partnership (AMP) is a project supporting teachers in advancing their knowledge about the teaching and learning of middle school mathematics. This presentation will share plans for a Teacher Leadership Institute (TLI) designed to train teachers in developing the characteristics necessary to drive change.

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Abstract:
AMP Teacher Leadership Academy - Creating a Teacher-Led Model of Ongoing Professional Growth

Research Objectives/Questions:

There are two main components of the Teacher Leadership Academy that we are interested in studying – the Summer CAMP and Action Research. The Summer CAMP was a weeklong overnight mathematics camp attended by 104 junior high youth that were engaged in a variety of mathematical projects and investigations led by teacher-leaders. By Action Research we mean a research project undertaken by teacher-leaders assisted and guided by professional researchers from AMP, with the aim of improving their strategies, practices and knowledge of the environments within which they practice.

The two initial research questions therefore are:

What affects can the Summer CAMP have on the teacher leaders’ ability to work collaboratively with teacher colleagues and improve their teaching practices?

How can the Action Research activities help develop leadership characteristics of the teachers in the Leadership Academy?

Proposed Methodology

The methodology chosen to investigate the research questions will be to engage in two case studies. One case will focus on the experiences and growth of a teacher leader who will be facilitating a collaborative community of learners (CCOL), a type of professional learning community, comprised of her own colleagues. The second case will focus on a teacher who will facilitate a CCOL for a neighboring district school at the same grade level as he teaches.

Multiple sources and techniques will be used in the data gathering process including interviews, surveys, documentation review, observation, and the collection of physical artifacts. Multiple pieces of evidence from the multiple sources of data will be used to uncover convergent lines of inquiry. One reason for choosing multiple cases to study is to help establish external validity and generalizability. The analysis techniques of cross-case examination and within-case examination along with an extensive literature review will be employed.

Discussion of Expected Outcomes:

Seeing the Need for Teacher Leaders
There has always been a need for administrative leaders on a school campus that serve as math coaches, division chairs, or principals. However, what is often overlooked is the importance of instructional leaders that are in the classroom full
time. These individuals help lead their colleagues through the process of improving the teaching and learning of mathematics through their example as exceptional teachers and their collegial bonds.

**The Creation and Purpose of TLA**
We recognize the importance of creating instructional leaders for the schools and districts we are working with in the Arizona Mathematics Partnership project. We have defined a teacher leader as one who strives to impact student learning; consistently assesses and seeks evidence of student success; and is a learner, improviser; and innovator. In an effort to provide the tools necessary to becoming such a leader we have created the Leadership Academy (TLA).

Leadership roles have begun to emerge and promise real opportunities for teachers to impact educational change without leaving the classroom. Teachers can now serve as research colleagues, work as mentors to new teachers, and facilitate professional learning communities as master teachers. Teachers also act as members of school-based leadership teams, instructional support teams and leaders of change efforts.

In spite of the fact that roles continue to expand, little is known about the teachers who take on leadership roles and their experiences. Researchers are only beginning to understand the complexities involved in creating and implementing leadership positions for teachers. This study is designed to add to the body of knowledge that exists about the characteristics and traits of teacher leaders as well as what an effective professional development model looks like that can advance individuals along the continuum of becoming a successful leader of mathematics educator colleagues.

**The TLA Plan**
The teacher leaders for the Teacher Leadership Academy are comprised of thirteen teachers who have completed the first two years of the AMP project participating in summer institutes and Saturday workshops that focused on building content knowledge primarily and CCOLs focusing on classroom implementation and collaboration.

The initial plan for the teacher leaders in the Teacher Leadership Academy is to participate in each of the following and what each will primarily address:

- **weeklong Summer Institute** – content knowledge, research skills, lesson planning for CAMP
- **Summer CAMP** – pedagogical knowledge, team-teaching with other teachers from different districts, teaching without a defined or predetermined curriculum
- **Saturday workshops** – content knowledge, pedagogical knowledge, and research skills
- **CCOL facilitators (9 of 13 TLs included)** – leadership
- **Action research projects in teams of 2-3 TLs** – knowledge for mathematics
teaching and learning

• Read research articles

Early Results
Although it is very early in the development and implementation phases of the teacher leader institute some successes and challenges have been observed. We have seen that the teacher leadership positions can yield significant personal benefits to those involved. Intellectual and professional growth and decreased isolation are personal gains teachers are reporting in their new leadership roles.

Intellectual and professional growth. Teachers are reporting that their knowledge of mathematical content and skills in teaching increased dramatically as a result of their involvement in leadership positions. New skills and knowledge also lead to increased confidence among lead teachers and a stronger commitment to teaching. Professional growth was more often effectual and the result of collaboration with peers in the CCOLs than activities separated from the normal school routine. Growth is occurring as lead teachers observed and assisted other teachers, worked with researchers, taught lessons alongside another teacher-leader colleague, and were exposed to new concepts and ideas.

Decreased isolation. Teacher leaders report a significant decrease in isolation as a result of opportunities to work with others outside of the classroom. Many teacher leaders are being successful in facilitating cooperation and collegiality more broadly among faculty members, thereby decreasing the isolation many teachers experience. This is primarily occurring through the Summer Institutes, workshops, math cAMP, and facilitation of the CCOLs.

We are finding that there are skills and abilities, which can be labeled and learned, make leadership more effective. Teachers need access to information and training of which we are providing through the Institute. From our early work, we see that the following set of leadership skills is important in the role of teacher leader:

• Promoting a clear vision and setting achievable goals
• Understanding the research literature and now to apply it to practice
• Effectively implementing the Mathematical Practices
• Taking initiative
• Persevering in the face of obstacles
• Analyzing and making adjustments/improvements
• Educating and building support with administrators
• Building a team spirit
• Providing support and encouragement
• Facilitating communication and reflection
• Celebrating and recognizing successes
• Exercising patience
• Networking with more experienced and knowledgeable mathematics education colleagues
A Study of the Need of Modernization for the Make-up Specialist Training

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I. Introduction

The application of makeup is not simply a means to express beauty; it is a way of representing various aesthetic values. Fusion is an important principle to explain the development of culture. Many methods have been developed to take advantage of technology, discovering its potential value. Visual media have evolved to increasingly integrate computer graphics (CG), incorporating a variety of fields. We study the need for modernization work on the utilizing media and design using 3D makeup simulation tools. The Make-up Specialist Training program is the Need to of Modernization. The purpose of this study is the beauty expert, special make-up artist, art professional education study program. The aim is to deliver more effective visual representations of the contents of the elements such as balance, proportion, rhythm, repetition, emphasis, contrast, harmony, and unity, using art makeup design. In this study, I was study use program the Electronics and Telecommunications Research Institute developed this is a three-dimensional facial avatar simulation program, which is available should you wish to use this tool.

II. Research Methods

This study is based on the creation of three-dimensional CG digital facial avatar makeup art, produced using simulation technology. Art makeup, such as face painting, body painting, and fantasy makeup, is a combination of the practical and artistic aspects of fine art makeup. Digital: step through the production process on the study; use the 3D CG Software deliverables. The Electronics and Telecommunications Research Institute (ETRI) developed a three-dimensional facial avatar makeup simulation program Software that generates a high-definition three-dimensional model using DSLR restoration technology. The camera identifies three lighting aspects: UV rays, polarization, and general lighting. An Internet-based literature search of research methods was conducted in order to establish a work plan. Research subjects and take advantage of the 3D-simulation program for the development of educational programs through a four-year college students majoring in aesthetics you chose. First, major college students make up course, and 15 weeks, 3 hours per week, 94 people, select class. Secondly, a major college team of six persons per design. Makeup design is color and
Gradation, form design elements. Third, the students presented the results and character design, fill out the questionnaire and analyzed the type of features. In this study the collected data is analyzed using the SPSS program to WIN: 21.0

III. Results and Discussion

Makeup design elements include point, line, surface, color, and texture. In this study, effective makeup design was interpreted as being based on the representation of particular elements, notably the design principles of balance, proportion, rhythm, repetition, emphasis, contrast, harmony, and unity. It is a compromise between 2D, 3D fusion of art for the human body make-up. Make-up of various design elements, colors, textures, shapes, lines, points, faces, etc. is expressed through. This study is the result of the measurement tools reliability verification for Cronbach's α usability 0.87, interestingness 0.82, was acquired 0.82, creativity 0.81. 3D simulation program satisfaction 0.95 all appeared to be an authoritative level equal to or greater than 0.80. The advantage of this program is to recognize that participants face 3D model 63.0 % the most in years. This program is called the delicate makeup skills learn to recognize significant technologies 65.2 % the most in years.

IV. Conclusion and Suggestions

The Make-up Specialist Training program is the Need to of Modernization. The purpose of this study is the beauty expert, special make-up artist, art professional education study program. CG three-dimensional simulations that use avatar character facial makeup to take advantage of media-based art makeup design is very new. I believe that evaluations and demonstrations the appropriateness of such a novelty approach for the medium is well worth researching, in order to increase the appeal of the medium. This study was recently under scrutiny in relations to digital simulation and various three-dimensional designs, in terms of how to take advantage of a wide range of applications, and how to apply the findings through media and the dissemination of basic research. This study applies the characteristics of the limited existing stereoscopic three-dimensional and digital simulation programs in order to take advantage of the empirical research, providing a basis to implement this research in a meaningful way.

- References

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- This work was supported by the National Research Foundation of Korea Grant funded by the Korean Government (NRF-2014S1A5A8018491)

- This research is supported by Ministry of Culture, Sports and Tourism(MCST) and Korea Creative Content Agency(KOCCA) in the Culture Technology(CT) Research & Development Program 2014
a) Relating trends in large-scale science studies to how teaching and learning are constituted in different school environments in Sweden (540)

b) Science education

c) Paper Session

d) Previous large scale studies point to a downward trend in Swedish students’ performances in science over the last decade. Analyzes indicate that a reinforced knowledge segregation of Swedish schools and declining results among low- and mid-ranged performers explain the trend. In this paper we analyze how this trend could be related to different activities in a science classroom perspective. This means to analyze the different use of language and science classroom discourse.

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Abstract:

Relating trends in large-scale science studies to how teaching and learning are constituted in different school environments in Sweden

This paper is based on an interest in increasing the understanding of trends regarding Swedish students’ knowledge in science by exploring the relation between results of large-scale studies (PISA and TIMSS) and how science teaching and learning are constituted in different school environments. Previous large scale studies point to an explicit downward trend in Swedish students’ performances in science over the last decade. Our analyses indicate that a reinforced knowledge segregation of Swedish schools and declining results among low- and mid-ranged performers explains a main part of the trend. In this paper we analyze how this trend could be related to and visible in different activities in a science classroom perspective in Sweden today. This means to analyze the use of language and science classroom discourse, in theoretical and practical parts of the classroom activities. In addition, it involves exploring different school areas which have either a large proportions of high achievers or low performers or areas that experienced a substantial improvement or decline during this period. The purpose is to analyze the empirical material which comprises examples of teaching and
learning sequences, in a selection of these different schools areas. Our expectations are to increase the understanding of how national trends from large-scale studies are constituted and become explicit, distinguish success and decline factors and identify suggestions of practical action programs for science teaching.
The Impact of Student Athlete Personality on the Preferred Coaching Behaviors

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Abstract:

There has been extensive research, albeit with varied results, on how demographic information has impacted athletes’ preferred coaching behaviors (Beam, Serwatka, & Wilson, 2004; Sherman, Fuller, & Speed, 2000; Burdette, Joyner, & Czech, 2012). Variables such as gender, skill level, and type of sport have rendered mixed results, suggesting that they might be limited in explaining preferred coaching behaviors. Little research exists on athlete personality and preferred coaching behaviors. Therefore, the purpose of this presentation is to identify the correlates of leadership preferences, specifically, among athletes across varying personality traits. The sample will be collegiate female and male athletes. Understanding each athlete’s personality characteristics and, when necessary, adapting coaching behaviors may provide for better experiences for both athletes and coaches. Therefore, this presentation is geared toward current and future coaches and coaching education instructors.
Title: Approaching classroom dialogues – Using spy glasses for data collection

Topic area: Science education (or if there is an area related to methodology within educational research)

Format of presentation: Paper session

Description:
In this paper we discuss the possibilities of using spy glasses in order to capture both students’ talk and their actions in the science classroom. The rich data material highlights the possibility of approaching all students’ actions in the classroom but also points to the necessity of having an analytic focus when studying the comprehensive material. The results show that spy glasses can be an important analytic tool for studying learning situations in the classroom.

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Abstract:
Many studies within educational research seek to investigate students’ dialogues for studying learning situations. One difficulty is however to approach students’ discussions in action. In this paper we discuss the possibilities of using spy glasses in order to capture both students’ talk and their actions in the science classroom. This methodological approach makes it possible to come close to all students’ actions when working in small groups or doing laboratory work. This means that the spy glasses register their discussions with each other but also what they are doing with the laboratory equipment, what they write or what they focus on in a written text. This methodological approach provides a very rich data material and many hours of recordings for one single lesson. In order to approach the comprehensive data material we suggest clear analytic foci and iterated analytic phases. The preliminary results show that spy glasses can be an important analytic tool for capturing student dialogues and studying learning situations in the classroom.
ABSTRACT

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ABSTRACT

H. Jerome Freiberg

Consistency Management & Cooperative Discipline® (CMCD®) is a classroom management program that moves beyond discipline into a comprehensive person-centered Behavioral, Instructional, and Organizational (BIO) management model (Freiberg, 2012), intended to increase student acceptance of personal responsibility for learning and behavior while decreasing disruptions and improving climate and student achievement. Much of how we teach (K-12) is a function of our classroom management concerns. However, management is more than student discipline. Using over 50 classroom and instructional management strategies, CMCD moves teachers toward a management design that is preventative and pro-social, while empowering student voices and ownership. The synergistic BIO components provide support for teachers to maximize student self-discipline, engagement, and learning.

Behavioral Management strategies increase teachers’ abilities to prevent problems and intervene in ways that solve problems to provide a consistent and cooperative classroom. Effective elementary teachers prevent classroom disruptions before they occur by positively interacting with their students using person-centered classroom management systems that create healthier learning communities (Cornelius-White, 2007; Freiberg & Lamb, 2009). CMCD behavior strategies are designed to move students from passive tourists to active citizens by equalizing student opportunities for taking personal responsibility. Students become engaged in classroom operations by taking on roles as Classroom Managers (Freiberg, 1996; 1999), cooperatively developing rules by creating a Class Constitution, and resolving conflicts using the Peace Table and Vine of Kindness. CMCD classrooms have clear student responsibilities built by consensus, and consequences fit the context. Classrooms transform into caring communities where adults and students both take active roles in shaping their environment. Schools and classrooms characterized as communities show significant, long-term positive effects on academic performance, attitudes, and motivation (Bryk, et. al., 2010). A list of publications is provided on pages 6-7.

CMCD fosters positive classroom climate and student-teacher relationships by increasing opportunities for students to participate in the inner-workings of the classroom. Teachers support their students in leadership roles as class managers, from attendance-taking to computer operations to substitute managers. Hiring includes job applications, interviews, and job rotations every 4-6 weeks. Students who have healthier relationships with their teacher have higher social competence and increased social conversation and cooperation with peers (Pianta, La Paro, & Hamre, 2008). Similarly, teacher-student relationships are linked to children’s competence and provide protective factors against retention or referral for special education (Pianta et. al., 1995).

With caring classrooms, strong student-teacher relationships, and daily routines in place, instructional distractions and interruptions are minimized, enabling students to focus on learning (Slavin & Lake, 2008). CMCD creates a consistent, positive climate (Eiseman, 2005) with significantly fewer discipline referrals (Freiberg, Stein, & Huang, 1995; Opuni, 2006).

Instructional Management strategies, particularly in urban classrooms, enable teachers to move beyond lessons constrained by student behavior (e.g. lecture, direct instruction) toward models with greater student engagement (e.g. role-play, cooperative groups, hands-on learning centers). CMCD supports more interactive instructional methods with consistent daily routines that provide predictability rather than rigidity.

To establish and maintain active learning, teachers learn to change the way they and their students interact with the curriculum, moving from primarily teacher-directed instruction toward more interactive and cooperative approaches where students become vigorous participants (Freiberg & Driscoll, 2005). In CMCD classrooms, lessons begin immediately (using Starters), transitions are planned without time lost, and classes end with a Reflection/Exit Ticket where students describe what they learned. CMCD encourages active student
engagement with equal opportunities to respond to teacher questions. The teacher randomly selects from a Go-around Cup containing sticks with each student’s name and a student-selected individual praise word. Students are asked to work collaboratively, discussing their learning in pairs or mixed groups.

**Varying instructional delivery** changes daily practices that can improve student achievement (Slavin & Lake, 2008). As students transition to greater classroom management responsibilities, teachers find time for cooperative learning utilizing BIO management methods. CMCD teaches how to effectively manage cooperative groups and facilitate differentiation using learning centers, smart boards, or tablets. A synthesis of 20 studies on the effects of cooperative learning found that well-designed cooperative instruction had positive academic effects ($E = .44$); that held across all tested grades and subjects (Dean, Hubbell, Piltler, & Stone, 2012). For cooperative learning to be effective, several factors are needed: genuine respect for different perspectives, using differentiated student roles, building strong team relationships, and providing students with individual accountability (Igel & Urquhart, 2012). CMCD cooperative grouping strategies incorporate these elements into teachers’ management of active learning.

To improve classroom communication, teachers use Focus Signs or visual markers to share Learning Objectives, Lesson Activities, Homework, and a Countdown Poster for long-term assignments. These visual cues help students focus on learning tasks. Additionally, a student timer manager facilitates pacing. Cornelius-White’s 2007 meta-analysis found that classrooms with similar conditions had significant, positive correlations for student participation ($r = .55$), satisfaction ($r = .44$), self-efficacy/mental health ($r = .35$), and social connection/skills ($r = .32$).

The cornerstone of CMCD’s instructional management is supporting teachers in building student self-discipline, a condition necessary for teachers to use more active instruction and students to take greater ownership in learning. CMCD provides students a voice in the classroom through opportunities to take on classroom responsibilities and grow more connected. These are integral components of the CMCD process of developing self-discipline. Rogers (1951) defined self-disciplined students as those who: “are capable of intelligent choice and self-direction, . . . are critical learners, . . . adapt flexibly, . . . utilize all pertinent experience freely and creatively, . . . and cooperate effectively” (p. 387–388). In his two-year national study including classroom observations, Eiseman (2005) found that CMCD teachers showed: “increased teacher willingness to experiment with demanding instructional strategies” (p. 28). The instructional component in BIO builds student opportunities to accept personal responsibility, minimize student disruptive behaviors, save classroom time, and maximize learning (Opuni, 2006).

Organizational Management strategies allow teachers to maximize the physical and temporal environment of the classroom. Students collaborate with their teacher to improve the inner workings of the classroom, enhancing classroom functionality and giving more time for academic work. CMCD strategies enable students to know how and where to independently access learning tools with minimal disruptions (e.g., in/out subject trays and supply boxes). In a quasi-experimental study of 394 students (grades 3-5), student achievement gains were greatest in classrooms that were effectively organized (Doherty & Hilberg, 2007). CMCD strategies are designed to facilitate teacher and student self-organization by maximizing classroom flow and creating consistent patterns for student behavior (e.g., Managers and Open/Closed signs for resources).

To increase classroom functionality, CMCD streamlines routines. Managers facilitate paper flow, turn a Teacher Time/Student Time Sign to define both teacher-led and student self-directed instruction, and assist classroom visitors. CMCD coaches assist teachers in creating consistent classrooms with predictable procedures and student-managed responsibilities, saving both teaching and learning time. With procedures in place, classrooms can function more effectively and promote deeper student engagement with the curriculum (Holt, Hargrove, & Harris, 2011).

By increasing time for academic work through CMCD BIO strategies, teachers and students can engage in meaningful interactions and learning. Aronson, Zimmerman, and Carlos (1999) found daily engaged learning
only occurred 38% of the time. In a multi-year evaluation study of 44 schools using CMCD, Opuni (2006) shows instructional management strategies saved from 2.2-5.4 weeks of instructional time over the course of a year—“time previously used for discipline and organization” (p. 8). CMCD BIO content focuses on preventing disruptive behaviors and creating more effective, consistent, and efficient learning environments for urban classrooms. CMCD strategies thus enable teachers to access a broader instructional repertoire.

**External Findings of Consistency Management & Cooperative Discipline®**

**August 2013** - The Office of Juvenile Justice Delinquency Programs (OJJDP) identifies CMCD as a research-tested Prevention model program that reduces youth involvement in crime. After a third-party review of CMCD’s research, CMCD was also selected by OJJDP for inclusion in its Model Programs Guide in the School/Classroom Environment category. [http://www.ojjdp.gov/mpg/](http://www.ojjdp.gov/mpg/)


**November 2012** – (Communication from the U.S. Department of Justice’s Office of Justice Programs) Congratulations, your program, Consistency Management and Cooperative Discipline (CMCD), has been identified for inclusion in CrimeSolutions.gov! (OJP email to CMCD, 2012). Crime Solutions is an effort by the U.S. Department of Justice’s Office of Justice Programs (OJP) to identify effective, quality programs and practices in the fields of criminal justice, juvenile justice, and crime victimization to serve as evidence-based models for the field. Via a contract with Development Services Group, Inc., OJP has recruited expert reviewers to assess the evaluation literature on CMCD, which is now included in evidence-based online repository serving as a valuable clearinghouse of information about what works and what is promising in justice programs and practices.

**April 2010** - US Department of Health & Human Services (Head Start Division) identified CMCD as an “Area of Strength” in Gulf Coast Community Service Association Head Start/Early Head Start programs. It stated that the GCCSA had “strength in its implementation of a consistent learning environment through the use of an innovative classroom management system [CMCD].”

**September 2009** - Classroom Management – A Pathway to Student Achievement: A Study of Fourteen Inner-City Elementary Schools by H. Jerome Freiberg (University of Houston), Chris A. Huzinec (Houston Independent School District), and Stacey M. Templeton (University of Houston). CMCD programs show significant value-added improvement in reading and math and significant effects in reading and math after one year of implementation in elementary and for middle schools. CMCD students ranked in the 67th percentile in math and in the 64th percentile in reading. Control students ranked in the 50th percentile in both math and reading.

**September 2008** - Effective Programs in Elementary Mathematics: A Best Evidence Synthesis by Robert E. Slavin and Cynthia Lake (Johns Hopkins University). CMCD was identified in the top 11 programs nationally that significantly improved student mathematics achievement. CMCD improved math achievement although the program offers no mathematic content—student improvement linked to better classroom management and more time for instruction. Full report available in Review of Educational Research, 78(3), 427-515.

**Spring 2008** - Paul Harwood of The London Challenge identifies CMCD as a “very successful programme,” garnering “significant improvements in behaviour” See report titled Consistency Management and Cooperative Discipline programme, London Digest, 2(3). [http://www.ioe.ac.uk/about/documents/Study_Departments/LERU_LDigest2.pdf](http://www.ioe.ac.uk/about/documents/Study_Departments/LERU_LDigest2.pdf)

**August 2007** - CMCD is listed as a promising program to decrease South Carolina’s school dropout population in the At-Risk Student Intervention Implementation Guide published by the South Carolina Department of Education.
January 2006 - The Effectiveness of the Consistency Management & Cooperative Discipline® (CMCD) Model as a Student Empowerment and Achievement Enhancer: The Experiences of two K-12 Inner-City School Systems. Study by Dr. Kwame Opuni (University of St. Thomas, Houston) shows significant student achievement and school climate gains against control schools in two cities.

April 2005 - An Evaluation of Consistency Management & Cooperative Discipline® (CMCD®). J. W. Eiseman included CMCD in his “Implementation for Success” national study report. The study found CMCD improved student achievement and climate, with higher student engagement than comparison schools.

January 2004 - Documentation of structured analysis for selecting scientifically-based research: Instructional strategies and programs (Iowa Math Content Network Review, 2004). The IMCN reviewed a 2001 study entitled The effects of Consistency Management & Cooperative Discipline on student mathematics achievement in seven Chapters I elementary schools in the Journal of Education for Students Placed at Risk, 6(3), 249-270. On a scale from 1(low) to 5 (high), the IMCN rated the study’s findings a 4/5.

October 2002 - Project GRAD: A Comprehensive School Reform Model, Project GRAD/Houston 2001-02 Evaluation. Dr. Kwame A. Opuni and Ms. Mary L. Ochoa’s evaluative study shows that after one implementation year, 13 CMCD schools outperformed their comparison cohort in math and reading on the Stanford 9 test. Differences between project students and comparison students were statistically significant in both math and reading with effect sizes of >0.31. The study showed that CMCD teachers and students gain from 7 to 18.5 days of additional instructional time that would have been used for classroom discipline, equaling up to 3.7 weeks.

May 2002 - Dr. Frederick Mosteller, Director of the Center for Evaluation, Harvard University Department of Statistics, identified Dr. H. Jerome Freiberg as having excellent studies in research on CMCD’s program’s effectiveness.

June 2000 - The Center for the Study of Violence Prevention at the University of Colorado, Boulder Institute for Behavioral Science reviewed 116 Discipline and Violence Prevention Programs. They reported only four U.S. programs met its research criteria for multiple quantitative evaluations that were statistically significant, included third-party evaluations, were effectively replicated in multiple locations away from the home site, provided adequate support, and showed evidence of sustained effects. CMCD was the only comprehensive pre K – 12 program to be recognized.

January 2000 - The Chicago Annenberg/NLC CMCD School Achievement Data: Chicago Annenberg Challenge/ NLC Progress Report shows CMCD schools performing at or above national norms on the ITBS, with a 23% and 42% raw aggregate growth in reading and mathematics in 1998-99 compared to a city-wide growth of 4% in reading and 11% in mathematics. The number of students performing in the bottom quartiles in 5/5 CMCD schools decreased each year between the beginning of CMCD and the end of implementation, while the number of students performing in the Top Quartiles in 5/5 CMCD schools increased.
Articles, Books and Chapters About Consistency Management & Cooperative Discipline®


1. Title: Communication in the Management Functions of Public Elementary Secondary School Managers: Status Problems and Issues

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6. Abstract and/or full Paper:
COMMUNICATION IN THE MANAGEMENT FUNCTION OF PUBLIC
ELEMENTARY SECONDARY SCHOOL MANAGERS: STATUS PROBLEMS
AND ISSUES

Schools are perhaps the most complex of all social inventions. It is an organization that deals with the tasks of structuring, managing and giving direction to an intricate mix of human product that gives rise to unique problems of organization and management. It follows similar patterns of forming and attaining its desired hierarchy of goals. It is also considered as the sole agency in carrying out educational policies and functions of the state.

However, it is neither impossible for the organization to achieve its purpose nor perform its function unruffled without the services of competent, qualified, efficient and effective administrators and teachers. Given the varying attitudes, desires and experiences of different human beings, it is clear that management requires considerable knowledge and understanding of the basic communication process.

Good communication is necessary to influence, inform, and express feelings and coordinate human and physical elements of the organization into an efficient and effective working unit. When communication fails, organized activity also fails; uncoordinated activity or none at all, prevails.

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INTRODUCTION

THE PROBLEM AND ITS BACKGROUND

Schools are perhaps the most complex of all social inventions. It is an organization that deals with tasks of structuring, managing and giving direction to an intricate mix of human product that gives rise to unique problems of organization and management.  

Like other organization, it follows similar patterns of forming and attaining its desired hierarchy of goals. It is also considered as the sole agency in carrying out educational policies and functions of the state.

Mark Hanson adheres to Everett Rogers’ view on organization as a stable system of individuals who work together to achieve common goals through a hierarchy of ranks and division of labor. A key function of organizational structure is to define channel, give order to actions and events, thus providing stability and predictability.

In a school setting, the structure defines roles and responsibilities of teachers and administrators as well as ensures that lines of coordination and control are in place. The structure serves to restrict and stabilize the flow of communication, making possible an orderly

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1 E. Hanson, *Educational Administration and Organizational Behavior* (Needham Heigths, Massachusetts: Allyn & Bacon, 1996), 1.

2 Hanson, 1
distribution of information. The educational managers, considering that they are goal-setters, need basic knowledge of the nature and principles to everyday problem.

However, it neither is impossible for the organization to achieve its purpose nor perform its functions unruffledly without the services of competent, qualified, efficient and effective administrators and teachers. Given the varying attitudes, desires and experiences of different human beings, it is clear that management requires considerable knowledge and understanding of the basic communication process.

Raymond Zeuschner\textsuperscript{3} viewed communication as inevitable and irreversible, which means that once a message goes out, it cannot be called back. It can be modified, rescinded, neglected, distorted, or amplified once the message has been sent but cannot be deleted.

Communication takes place in a constantly moving stream of time and time is not reversible. Hence, the value of communication cannot be underestimated. Good communication is necessary to influence, inform, and express feelings and coordinate human and physical elements of the organization into an efficient and effective working unit. When communication fails, organized activity also fails; uncoordinated activity or none at all, prevails.

\textsuperscript{3} Raymond Zeuschner, \textit{Communicating Today}, 2\textsuperscript{nd} ed. (USA: Allyn and Bacon, 1997), 22.
Communication, according to Kaye,⁴
doi:10.1234/56789

. . . essentially involves the interpretation of
relationships and interactions between self and
others.

Hicks and Gullett⁵ further stressed that

communication is basic to an organization. It is
the cohesive bond between members of an
organization.

Guthrie and Reed⁶ also emphasized that

. . . communication links individuals, creates
and maintains individual and organizational
images or perceptions, and motivates,
assuages and persuades others. . . .

As asserted by Lee O. Thayer,⁷ the administration of any
organization can be accomplished only through communication. The
effectiveness of administrative organization within an organization is
therefore the best measure of the effectiveness of the administration of

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504.

⁶ James W. Guthrie and Rodney J. Reed, *Educational Administration and Policy:
Effective Leadership for American Education*, 2nd ed. (Massachusetts: Allyn and Bacon, 1991),
353.

that organization. Indeed, effective and efficient communication means efficient and effective administration.

Communication is the essence of effective management.\footnote{Richard A. Gordon, et al., \textit{Encyclopedia of School Administration and Supervision} (New York: Oryx Press, 1988), 65.} The ability to communicate is the most used and the most usable – hence the most valuable ability any administrator may exercise in his job. Communicating is indeed a very important feature within the activities of a school system. It is so pervasive and it is used at all times. It can be used effectively to promote better understanding and unity among all the members within the school organization. It can be emphatically stated that no one can manage any organization well that is not knowledgeable of communication principles and technique. It can be equally stressed that no school system can achieve its goal without effective, efficient and clear internal and external communication.

Communication management is an essential component of communication. As defined by Kaye, communication management is

\[\ldots\] the process of which people engaged in communicating, that is constructing, coordinating and clarifying meanings.\footnote{Kaye, 274.}

Successful administration and management requires the desired process to constantly altering conditions of modern technology. The changes prevalently going on in organizations as an effect of the introduction and use of information technology are now beginning to
experience the effects that these “smart machines” are causing. The outcome of this transformation is that the structures and processes of organizations are being changed and will continue to transmute fundamentally. This communication and information link allows the organization to take advantage of the opportunities and provides for uniformity among the different affiliated organizations and units within the system.

Hodge, Anthony and Gales\textsuperscript{10} emphasized that computerization undermines traditional forms of authority and breaks down barriers between job categories and functions. There are established evidences that the introduction of information technology is having an impact on structures and processes in organization. Information technology is permitting organizations to become more flexible and more organic. The interplay between information, information technologies and organizational design is key to the strategic success of the organizations.

As we look at the changes that are taking place in the organizations today, it is clear that success of school managers are dependent upon the existence of an effective and efficient communication which is best suited to the needs of the new millennium.

STATEMENT OF THE PROBLEM

The study attempted to determine the status, problems and issues of communication as a management function of school administrators in the Southern Tagalog Region.

Specifically, it sought to answer the following questions:

1. How can the teacher-respondents describe the administrators’ sending and receiving communication competencies when classified as:
   1.1. informative?
   1.2. affective?
   1.3. imaginative?
   1.4. ritualistic?
   1.5. persuasive?

2. To what extent does each school administrator vary according to their:
   2.1. Verbal communication abilities?
      2.1.1. group discussions?
      2.1.2. meetings?
      2.1.3. interpersonal?
      2.1.4. public speaking?
   2.2. Written communication abilities?
3. To what extent that each school administrator very according to their ability to act as:

3.1. sender/encoder?

3.2. message formulators?

3.3. channel users?

3.4. decoder?

3.5. feedback givers and utilizers?

4. How can school administrators describe communication barriers in terms of their:

4.1. organization size?

4.2. Selective perception?

4.3. Coding and decoding?

4.4. Filtering?

4.5. Information overload?

5. To what extent do certain group of school administrators’ employ/utilize the communication process? In which area of communication process do school heads find problems and difficulties?

6. What are the perceived problems and difficulties met by the school administrators that can distort the communication process in a hierarchical setting and in what way do they think they can be assisted to overcome such difficulties?
7. How can the respondents be described along with their communication styles?

8. What is the degree of communication efficiency of the school administrators as viewed by the administrators themselves and their teachers?

9. What empirical values can be derived from the findings of the study?

**HYPOTHESES**

Based on the statement of the problem, the following null hypothesis were formulated:

\[ NH_1 \] There is no significant variation in the school administrator’s communication process with regards to the following:

a. sending/encoding abilities

b. message they encode

c. channels they use

d. decoding skills

e. giving and receiving feedback

\[ NH_2 \] There is no significant relationship between the measures used by schools administrators in evaluating the effectiveness and efficiency of their communication.
NH₃ There is no significant relationship in administrators’ communication process with that of the noted problems and difficulties.

NH₄ There is no significant difference between the respondents’ responses on the administrators’ degree of communication efficiency.

CONCEPTUAL FRAMEWORK

Communicating is the work a school manager performs to create understanding among people so they can act effectively. More so, the management functions of planning, organizing, reviewing, controlling and directing or leading become operational only through effective communication.

The process of communication consists of asking, telling, listening, and understanding. The receiver hears, listens, understands, accepts, and actuates the message given by the source. In management, it is the exchange of information with subordinates, associates, superiors, and others about plans, progress, and problems.
The study dealt primarily with the dimensions of communication abilities among school managers. These included verbal and written communication abilities, as well as the ability to act as a sender, message formulator, channel user, decoder, feedback giver, and utilizer.

The research paradigm is illustrated in Figure 1. The input involved school managers’ sending and receiving communication competencies, communication barriers, communication style, and communication efficiency. The throughput focused on enhancing school organization and improving schools’ communication processes through comprehensive training design in communication. The output aimed to enhance and effectively organize school communication for effective and efficient schools.
communications as one of the management functions of a school manager. With this, communication skills, competencies, problems and issues are being covered.

As illustrated by the paradigm, the study is anchored on the belief that if there is an ideal organization communication process, then the school’s problem will be lessened considering that one of the cause of school’s controversies is a product of miscommunication.

The study identified independent variables as the following: the school managers’ sending and receiving communication competencies, communication barriers, communication process, communication style and communication efficiency. The intervening variables are the school managers’ verbal and written abilities, and their ability to act as sender, message formulator, channel user, decoder, feedback giver and utilizer.

The dependent variables are the enhancement and effectiveness of the school organization, and the effectiveness and efficiency of the school’s communication process.
DEFINITION OF TERMS

For greater clarity and understanding, the following terms were defined as follows:

**Attitudes** – refer to source-receiver’s entire personality. One’s feelings about oneself often cause one to structure communication a particular way.

**Channels** – are links that connect the source and the receiver, the observable carrier of the message.

**Communication** – is the process by which ideas, thoughts, opinion, information and feelings are transmitted from one individual to one or more others through a common language or set of behavior.

**Communication Apprehension** – refers to the fear an individual experience while communicating resulting to tension, embarrassment and shyness.

**Credibility** – refers to senders’ ability to transmit messages.

**Decoding** – means interpreting what the message means.

**Encoding** – refers to the transformation of ideas or thoughts into a form that will convey those ideas or thoughts to an intended receiver.

**Feedback** – enables the source to know whether or not the message has been received and interpreted clearly.

**Interpersonal Communication** – is an interactive process that involves a person’s effort to attain understanding and respond to it.
Knowledge and experience – refers to the source /encoder ability to communicate accurately and effectively about something he has knowledge and related to his past experiences.

Messages – are the content of the communication process. They may be verbal (written or spoken) or nonverbal (everything else, from gestures and movements to smells and objects).

Operational Efficiency – refers to the efficiency of the means and methods of communication. The administrators must know more about the available means and methods of communication and devising new and better methods to keep pace with the times.

Organization Communication – is the compound interpersonal communicational process across an organization.

Organizational Efficiency – deals with getting exactly the right amount of information to the right person at the right time.

Originator’s Thinking – refers to the originator’s ability to think well enough, to adapt to his attitudes quickly and to call upon a range of communicating techniques that will enable him to communicate successfully with most persons or groups no matter difficult the circumstances are.

Psychological Efficiency – refers to the accomplishment of making communication understood with the least possible emotional resistance or reaction.
Receiver Apprehension – refers to the fear to decode and interpret messages received.

School Administrator – refers to a person who applies administrative and supervisory techniques and procedures in operating the educational organization in order to accomplish the desired goals and objectives. In this study, it refers to school managers of public elementary and secondary schools.

Techniques – refer to skills and abilities applied in communication to make possible the most efficient and effective communication. Depending upon the techniques used, the administrator can communicate his meaning enthusiastically, positively and persuasively or unenthusiastically, negatively and persuasively.

SIGNIFICANCE OF THE STUDY

In the field of education, communication is an integral part of the school administrators’ and teachers’ professional equipment to share messages, ideas or attitudes that produce a degree of understanding that occurs in school among co-administrators, teachers, parents, students and other interested constituencies.

It is an inevitable instrument in getting things done and in sustaining and improving the will of the school staff to work together. As the administrator occupies a leadership position in the school or in the
district, it is vital to make them aware of their value in the organization and teachers as well.

The Southern Tagalog Region as one of the biggest in the country lies in a geographical location where it is confronted with problems and difficulties in communicating. Among these are organizational size, selective perception, communication filtering, information overload, poor choice of communication channels, and lack of feedback coding, decoding, and low level of technology.

The above-cited problems have unvarying solutions, but the researcher is plausible enough that they can be lessened if not totally extirpated.

Thus, the study draws significance to different groups of people in the academe.

First, to the **DepED Officials**. Since this study discussed the different communication issues and problems existing in the public school system, it is important that they are aware of it. Indeed, this study may serve as a guide in understanding the different problems being confronted by the school principals in terms of communication as one of important functions in their managerial functions.

Second, to the **School Administrators**. This study may give them the necessary feedback and may help pinpoint the strengths and
weakness of the communication process existing in the school
organization.

Third, to the **Future School Administrators**. This study may
serve as an eye-opener on the importance of effective and efficient
communication processes in the management of school system.

Fourth, to the **Elementary and Secondary School Teachers**. The findings of the study may be of help to them in identifying the
communication abilities of their respective school principal. Through
proper identification, problems may be lessened and avoided.

And lastly, to the **Future Researchers**. This study may be
important to them when they conducted studies related to this
undertaking. This may serve as their guide in exploring this scholarly
topic.

**SCOPE AND DELIMITATION**

This investigation may looked into the communication processes
leading to the different status, problems and issues being undertaken by the public school administrators and teachers in the Southern Tagalog
Region. The participants of the study included the selected district
supervisors, principals, head teachers and teachers of the school
divisions in Region IV. It was conducted during the school year 2000-
REVIEW OF RELATED LITERATURE AND STUDIES

This chapter presents literature and studies that are relevant to the present investigation and gives valuable insights about the topic of the research.

RELATED LITERATURE

In every organization, communication occurs constantly. It is the "lifeblood" that keeps the organization goes round. Many writers consider communication as the key to successful administration and functioning of any organization especially in a school system which utilizes the process of communication in the attainment of its goals and objectives.

In an organizational setting, communication is not only a matter of natural urges but of responsibility. Although the dynamic nature of the process is very difficult to isolate, it involves sending and receiving messages in various channels and networks as well as giving and utilizing feedback in performing it.

Communication is a whole process as adduced by Zeuschner. Several communication theoreticians agree that communication is a human activity, it is interpersonal, it is purposeful and

11 Zeuschner, op. cit. 22.
it is a process. The communication process is dynamic, continuous, irreversible and contextual. It is not possible to participate in any part of the process without implying the existence and functioning of its other parts.

Andres\textsuperscript{12} noted that it is useful for the managerial leader to have in mind the following principles of communications.

\textit{Principle of Line Loss} – which states that the more extended the communication, the less effective it tends to become.

\textit{Principle of Emotional Appeal} – argues that appeals to emotion tends to become communicated more readily than appeals to reason.

\textit{Principle of Application} – emphasizes that the more an idea is put to use, the better it is understand and remembered.

Hicks and Gullett\textsuperscript{13} pointed out that communication is basic to an organization’s existence as a manager spends up to 95\% of time communicating. Good communication is necessary to coordinate human and physical elements of the organization into an efficient and effective working unit. When communication fails, organized activity also fails; uncoordinated activity or none at all prevails.

\textsuperscript{12} Tomas D. Andres, \textit{The Effective Manager} (Quezon City: New Day Publishers, 1995), 107.

\textsuperscript{13} Hicks and Gullett, op.cit. 504.
Wright and Noe\textsuperscript{14} stressed that communication is an important skill of individual managers. Evidence suggested that communication ability is significantly related to a managers’ performance.

Not surprisingly, managers spend 80\% or more of each workday in such communication activities as meetings, phone calls and conversations. Of the remaining time, much is spent preparing or reading written communication. In fact, it is hard to think of anything a manager does that does not involve sending or receiving information.

Furthermore, from the perspective of each employee, the way that person communicates is important because it influences others’ evolutions of his/her abilities, attitudes and values to the organization.

Patrick E. Connor\textsuperscript{15} reiterated the American Management Association’s Ten Commandments of Good Communication. For him, sound ideas or well-reasoned decisions become effective when they are transmitted to others and achieved the desired action or reaction. Communication for him is a vital management tool.

On the job, one communicates not only with words but also though apparent attitudes and actions. Communication, then, encompasses all human behavior that results in an exchange of meaning. How well one manages depends upon how well one communicates in this broad sense.


\textsuperscript{15} Patrick E. Connor, \textit{Dimension in Modern Management} (USA: Houghton Muffin Co., 1978), 490.
Lussier\textsuperscript{16} cited that communication makes the organization go round. As the manager gets the job done through employees, they perform the five functions of management (planning, organizing, staffing, leading and controlling) through communication. The quality of communication has a direct effect on performance. Effective, free and open communication contributes to better performance and personal communication improves earnings.

Guthrie and Reed\textsuperscript{17}, Slocum\textsuperscript{18}, and Koontz and Weihrich,\textsuperscript{19} described that there are five component elements in the communication model. They include sender/encoder, messages, channels, receiver/decoder and feedback.

\textbf{Sender/Encoder} – Communication begins with the sender who has some thought, need, idea or information to transmit which is then encoded in a way that can be understood by both the sender and the receiver.


\textsuperscript{17} James W. Guthrie and Rodney J. Reed, \textit{Educational Administration and Policy: Effective Leadership for American Education}, 2\textsuperscript{nd} ed. (Massachusetts: Allyn and Bacon, 1991), 353.

\textsuperscript{18} John W. Slocum, \textit{Management} (USA: Addison and Wesley, 1982), 561.

Several factors affect the sender/encoder including communication skills, attitudes, knowledge and experiences, credibility and environmental and socio-cultural elements.

- Communication skills – To be effective, it is important that the source/encoder have good communication skills in the medium. If the message is verbal, good pronunciation, vocabulary and syntax are important. Written messages benefit from good spelling, skill in drawing, gestures and facial expressions are important.

- Attitudes – The source/encoder has attitudes that affect communication based on one’s entire personality. One’s feelings about oneself often cause one to structure communication a particular ways.

- Knowledge and experience – It is difficult to communicate accurately about something one has not experienced yet. If one has intimate knowledge or experience with something, one probably can communicate well about it.

- Environmental and socio-cultural elements – Everyone lives certain roles, occupies certain positions, commands certain restrictions. These and other elements in one’s environment and cultural background are reflected in communication.

Razik and Swason\textsuperscript{20} believed that the sender’s credibility is always at stake in an organizational communication. They anchored in Khandwalla’s notion that the source of information must be perceived as

knowledgeable to be credible. Once credibility is lost, it is difficult, if not impossible to regain within the organization where the loss occurred.

*Message* – is the source/encoder’s physical product. It is the idea that an individual hopes to communicate to the intended receiver. They may be verbal (written or spoken) or nonverbal (everything else, from gestures and movements to smells and objects).

Slocum (1982), cited five principles for increasing the accuracy of the encoding process.

1. Make the message relevant to the receiver. If receivers are to understand the message, they must be able to relate the information they are receiving to what they already know.

2. Reduce the messages to the simplest possible terms. The sender should use as few symbols or gestures as possible to communicate thoughts and feelings to the receivers. The simpler the message, the more likely it is to be understood.

3. Organize the message into a series of stages. A well-organized message increases the receiver’s understanding. It is probably best to develop one thought or feeling at a time so that the receiver is not overloaded. A message can be packaged into a series of stages with one stage completed before the next is introduced.

4. Repeat the key point of the message. The principle of repetition is important, particularly in oral communication, where words may not be clearly heard or fully understood the first time. The sender needs to use enough repetition to ensure clear understanding of thoughts and feelings.

5. Focus on the essential aspects of the message. Communication goals and key points should be sharply focused. This will avoid losing the message in details and
making it unclear. In oral communication, the impact of significant points can be heightened by a different tone of voice, pauses or hand gestures. In written communication, underlining or emphasizing key sentences and phrases can do it.

**Communication Channels** – Wright and Noe\(^{21}\) considered the channel as the style of transmission. It is the routing pattern that the message is to follow. Guthrie and Reed\(^{22}\) described it as the link that connects the source and the receiver. The channel through which messages travel provides another potential point of interference or distortion.

The choice of an oral or written channel depends on three important things: the importance of the message, whether a written record of the communication is needed, and whether immediate feedback from the receiver is needed.

Channels can also be formal. Formal channels follow the hierarchical structure of the organization. Informal channels are not found in the formal structure. These channels arise from employees talking, which have no official sanction and frequently contain a high proportion of misinformation.

Formal communication flows along the organizations’ lines of authority or task responsibility. Accordingly, there are three (3) kinds of

\(^{21}\) Wright and Noe, op. cit. 486

\(^{22}\) Guthrie and Reed, op. cit. 353.
formal channels used by managers: upward communication, downward communication, and lateral or horizontal communication.

In an upward communication, the message is directed toward a higher level in the hierarchy. It often takes the form of progress reports or information about success and failure of the individuals or work groups, reporting to the receiver of the message. Sometimes employees also send suggestions or complaints upward through the organizations’ hierarchy.

Upward communication should be encouraged because it provides feedback on how well employees understand the downward communication. Likewise, it can motivate employees to submit valuable ideas. It can provide an emotional release and at the same time, give the employee a sense of personal worth because a manager listens. To be effective, it must be allowed to occur freely.

Downward communication, on the other hand, involves a message traveling, to one or more receivers as a lower level in the hierarchy. The message frequently involves directions or performance feedback. Downward communication can be motivating when it includes praise and information about what is happening in the organization.

There are five reasons why managers use downward communication: (1) Job Instructions – communication pertaining to performance of a certain task, (2) Job Rationale – communication relating
a certain task to others in the organization, (3) Procedures and Policies – communication about organization policies, rules, regulations and benefits provided by the organization, (4) Feedback – communication about the individual job performance, and (5) Indoctrination – communication designed to tell the employees about certain events that the organization thinks important for employees to participate in.

Downward communication is probably the most frequently used channel in organizations. It may also be the mist misused since some managers place little emphasis on upward communication.

The third type, lateral or horizontal communication is that type of communication where message is directed to someone at the same level in the hierarchy. Formal communications that travel laterally/horizontally involve employees engaged in carrying out the same or related tasks. The messages might concern advice, problem solving or coordinating activities. The channels have become increasingly important for organizations that have adopted matrix structures because decisions need to be made quickly following the chain of command.

Informal communication is a type of communication outside the organization’s formally authorized channels.

The grapevine is the network for much informal communication. Grapevines develop in organizations to handle communication that the formal channels of communication do not handle. It is fast, efficient,
accurate, highly selective and discriminating and fulfills people's need to communicate, operates across formal lines of authority and supplements the formal channels. Because it is flexible and usually involves face to face communication, it is capable of transmitting communication rapidly.

The grapevine has some good and bad characteristics. It is desirable because it gives management insights into employee attitudes, provides a safety value for employee’s emotions, and helps spread useful information. It can also be undesirable because it spreads false rumors, and cannot be controlled by management and has no permanent members.

The old-boy network is an exclusive group that wields power through shared information. In an old-boy network, members share information to help one another along in their careers. It differs from other kinds of informal alliances among group of employees as its members have control over much of the organization resources.

Belonging to an old-boy network can be advantageous to its members, but from an organization’s perspective, it can be harmful. It limits some employees’ access to information and prevents the organization from readily tapping the potential of people outside the network.

Receiver/Decoder – The receiver is the person who gets the sender’s message. They are the ultimate goal of any message and they
are needed to translate the message finally into a form that people can comprehend. This link between senders and receivers is where communication interaction happens.

Decoding is the process by which receivers interpret messages and translate them into meaningful thoughts or feelings themselves. This process is affected by the receiver’s past experiences, intelligence, personality characteristics and expectations about the sender.

There are two major processes that affect the receiver: listening and feedback.

**Feedback.** Feedback refers to the verbal or nonverbal responses received from the individual or groups to whom the message is directed. Feedback implies at least a two-way communication. With feedback, the message originator can at least make a rough assessment of whether the message was received as intended. Feedback helps to detect misunderstandings when it is accurate and timely. If delayed or distorted by interpersonal or organizational “noise”, feedback may be useless. Feedback is most effective when it is obtained as close to the time of message transmission as possible.

Slocum\textsuperscript{23} cited five effects of feedback. It includes the following: (1) the action of the sender affects the reaction of the receiver, (2) reactions of the receiver serve as feedback and tell the sender how well the

\textsuperscript{23} Slocum, op. cit. 561.
objectives are being accomplished, (3) a sender who receives feedback that is rewarding will continue to produce the same kind of message; if the feedback is not rewarding, the message will eventually change, (4) the receiver exerts control over the sender by the kind of feedback he or she gives the sender, and (5) to improve feedback.

A communication is effective to the degree that it accomplishes the purpose intended. The only measure of communication effectiveness is the success a communication has in producing the desired result.\footnote{Thayer, op. cit. 3.}

The most important requisite for an effective communication is a clear, unequivocal purpose. Because the effectiveness of any communication is measured by the success with which it achieve its intended purpose. Without a purpose, any talk of effectiveness is meaningless.

Purpose is generally vague. To be specific, the originator of a communication must decide on three things:

1. What he wants the receiver of the communication to know after being exposed to the communication (information);
2. What he wants the receiver of the communication to feel like after being exposed to the communication and toward the originator, and
3. What he wants others not directly exposed to the communication to know and feel about it.

Beyond a clear and specific purpose, there are three basic determinants of communication effectiveness: 1) the originator's thinking, 2) his attitudes, and 3) his techniques. Communication effectiveness begins with the right kind of thinking ability, the proper attitude and full range of communication techniques.

The Administrator's Thinking. The effectiveness of any communication depends primarily upon the quality and effectiveness of the originator's thinking. For an effective performance in any endeavor, creativeness, clearness, accuracy and completeness must be reflected in the administrator's thinking.

In summation, the primary tool of the administration is communication, and thus that the administrator's ability to communicate effectively will be limited by, or facilitated by, the effectiveness of his thinking.

The Administrator's Attitude. The meaning of a communication does not seem to be complete until a reasonable notion of what the originator's attitude was at the time of communicating. In order to be consistent, one must have attitudes toward people and things. These attitudes provide the framework for organizing the world about us into meaningful patterns. The administrator must communicate with people
whom he does not know very well personally. His attitude will be reflected in his communication primarily by such qualities as tone, completeness, tact, positiveness, enthusiasm, friendliness and so forth.

Every quality that can be detected in any communication is a measure of the originator’s attitude toward his receivers, toward the subject of his communication, and toward the situation in which he finds himself.

The originator’s own attitude toward the receiver, toward the subject or toward the situation is the right one, the only appropriate one. The attitudes of the originator and the receiver play a great part in determining the meaning of the words uttered in a communication.

*The Administrator’s Techniques.* The administrator’s communicating techniques are reflected by such qualities in his communications as clearness, readability, direction, organization and presentation. It determines the level of attention and interest. Techniques reflect organization and cogency or argument, or significance of information. It affects all communication qualities, including those that reflect the originator’s thinking and his attitudes.

Communication efficiency may be thought of as a conceptual “measure” derived from a comparison of the expenditure (time, effort,
money, etc.) required producing a communication with effectiveness of the communication.\textsuperscript{25}

School administrators fall in any of the following communication styles: autocratic, consultative, participative and laissez-faire.

Accordingly, autocratic communication style demonstrates high task / low relationship behavior, initiating a closed presentation. The consultative communication style demonstrates high task / high relationship behavior, using a closed presentation for the task with an open elicitation for the relationship.

The participative communication style demonstrates low task/high relationship behavior, responding with open elicitation, some initiation and little presentation. Finally, the laissez-faire communication style demonstrates low task / low relationship behavior, responding with the necessary open presentation.\textsuperscript{26}

Efficiency can be appraised from two points of view: from the point of view of the originator or from the point of view of the receiver.

Planning improvement in communication efficiency consists of the following: (1) improving feedback channels, feedback evaluation and feedback utilization, (2) improving methods and means of communicating, (3) improving the attitude of the originator to ward those with whom he will

\textsuperscript{25} ibid.

\textsuperscript{26} Slocum, op. cit. 561.
communicate and toward the importance of communication problems in
general, improving the administrator’s ability to solve problems involving
communication, and improving the administrator’s techniques in
communicating, (4) improving the situation, and (5) improving the receiver.

There are different kinds of communication efficiency which are as
follows:

1. organizational efficiency
2. operational efficiency
3. psychological efficiency

Organizational Efficiency. The most important communication
problem is getting exactly the right amount of information to the right
person at the right time. To make communication efficient and effective,
one must know its purpose and its audience.

There are six ways wherein organization can be considered
efficient. First, it should be organized. Second, every man’s position – his
duties and responsibilities, his potential and direction – should be clear cut
and exclusive. Third, there must be a logical hierarchy in both line and
staff administration. Fourth, line organization and administration channels
should parallel communication channels. Fifth, methods of staffing and
promoting, as well as of evaluating job performance, should be
reevaluated with an eye toward eliminating deficiencies that lead to empire
building and promotion compulsion. Sixth, the desired goal of any organization has some action.

An efficient organization makes getting things done easy. Increasing the efficiency of the organization serves to improve the situation.

Operational Efficiency. Operational efficiency refers to the efficiency of the means and methods of communication. The means with which an organization communicates must keep pace with the ever-increasing speed of technological progress and cultural change. This means knowing more about the available means and methods of communication and devising new and better methods to keep pace with the times. Efficient communication depends basically upon the effective utilization of devices, means and methods. Communication devices, means and methods must support and facilitate the actions of the administrators.

Psychological Efficiency. Psychological efficiency refers to the accomplishments of making a communication understood with the least possible emotional resistance or reaction. To improve psychological efficiency, the misunderstanding that spring from the attitudes of both originator and receiver should be reduced.

Psychological efficiency of communication can be achieved through:
1. increasing satisfaction and decreasing frustration;
2. improving communication skills;
3. decreasing the “need” for “owning” information
4. improving the attitudes, the thinking and communicating techniques of originator and receiver, and
5. removing the barriers that hinder the smooth flow of the communication

Communication barriers from complete blockages to minor distortions can immerse at almost any point in the process.

Hanson\(^{27}\) identified the following barriers to communication:

*Original size.* Large, complex educational organizational has huge volumes of paper. There is always a chance that a message will get lost, thrown away and neglected. Reports need to be synthesized to enhance the possibility of misunderstanding.

*Selective Perception.* The occurs when people block out new information, especially if it conflicts with what they believe. When people receive information, they are apt to hear only those parts that conform to or reaffirm their beliefs. Information that conflicts with preconceived notions is either not processed or distorted to confirm preconception.

\(^{27}\) E. Mark Hanson, *Educational Administration and Organizational Behavior* (USA: Allyn and Bacon Inc., 1996), 229.
**Coding and Decoding.** The process of coding and decoding messages is always vulnerable to error. When the processes are alike, communication is most effective. When they are different, communication tends to break down.

**Filtering.** It is the process of altering or distorting information in order to project a more favorable image. This situation is somewhat understandable because no one wants to “look bad” in the eyes of his or her superiors.

**Information Overload.** This refers to receiving more information than what they can adequately process. When it occurs, the individual can respond in a number of possible ways.

Hanson\textsuperscript{28} and Hicks and Gullett\textsuperscript{29} conformed with Millers’ seven possible outcomes of information overload:

1. Omission – temporary failure to process some of the information
2. Error – processing incorrect information
3. Queuing – delaying responses during congested periods
4. Filtering – not processing certain types of information
5. Generalizing – reducing the levels of specificity
6. Multiple channels – processing information through other officials as in decentralization

\textsuperscript{28} Hanson, 229.

\textsuperscript{29} Hicks and Gullett, 504.
7. Escape – turning away from the task

*Low Level of Technology.* Hoy and Miskel\(^{30}\) pointed out that educational organizations have a relatively low level of technology. Thayer\(^{31}\) elucidated that the means with which an organization communicates must keep pace with the ever-increasing speed of technological progress and cultural change. This means, first of all, knowing more about the available means and methods of communication, and second, devising new and better methods to keep pace with the times.

**RELATED STUDIES**

The study conducted by Nassif aimed to develop proficiency in the discipline of speech of communication. Specifically, this field is defined as the educator’s use of speech delivery as a tool to effective and efficient communication of any topical content material to students.

This work focused primarily on the development of oral delivery styles and strategies for professional educators to enhance and improve the educational process. If these works provide educators with understanding of speech techniques, styles and patterns to enhance their

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\(^{31}\) Thayer, op. cit. 3.
performance in the classroom, it will be contributing to not only the field of education, but also to future generations of both students and educators.

Nassif’s study focused on the development of a series of audiocassette learning programs designed to train instructors at the college level in the use of speech methods and strategies that will improve and enhance their classroom performance.³²

Meanwhile, the purpose of Watkin’s study was to: (1) conduct exploratory psychometric and statistical analyses of self rating measures of leadership (LEAD-Self) and communicator style (CSM) using a sample of male and female elementary school principals (N=251), and (2) determine any significant sex differences in the responses to the two measures.

The result showed that there were no differences between the men and women on the LEAD-Self leadership categories. Men and women chose the selling and participating styles. Also, no sex differences were obtained in the leadership adaptability scores from the LEAD-Self.³³


On other hand, Andree's study examined and explored the relationship between conflict management style and organizational communication climate as related to communication in Oakland Country, Michigan Schools. Four research questions were posed to determine the relationship between principals and communication climate and their buildings.

A significant correlation was found between non-confrontational communication style and descriptive vs. evaluative climate. When confrontational-solution oriented was correlated with five of the six dimensions of communication climate, the significant relationship between compromise-solution oriented and provisional vs. certainty and problem orientation vs. control principals who used this style were more likely to work in buildings where control and certainty were part of the climate. The six communication climate dimensions were not related to a controlling communication style.

The study further indicated that principals and teachers differed in their perceptions of communication climate (equally vs. superiority and provisional vs. certainty). A significant difference was found among principals on the four communication styles. Regardless of building level, principals tended to perceive similar communication climates within their
schools. The number of teachers and size of the building were significant predictors of a confrontational-solution oriented communication style.\(^{34}\)

The purpose of Miller’s study was twofold. First to determine the perceptions of public schools superintendents in Virginia concerning the competencies and skills they need as individuals to have strengthened in order to perform more effectively in their professionals role, and second to determine their perceptions of the ways in which these competencies and skills can best be delivered.

Percentage response totals were determined for each of the 88 competency items as well as the mean and standard deviation. Those percentage responses ranged from 16% to 57%. Of the 16 items identified most frequently, four items related to technology knowledge and use, and seven to students learning and instruction. Among the 16 items identified least frequently were three in communication skills and three associated with character make-up of superintendents.\(^{35}\)

Sage-Phillips’ study developed a valid, reliable, and useful instrument for principals to gain feedback from faculty and staff regarding their communication skills. The pilot instrument was developed after an


extensive review of the literature and consultation with experts in the field of communication.

Factor analysis procedures were used to reduce the instruments from the original 200 statements to 56 statements as a result of two pilot tests. One hundred and forty-two (142) participants in nine public schools and graduate educational classes at Wayne State University completed the initial pilot instrument. The analysis resulted in elimination of 143 statements.

The second draft on the instrument was completed by 205 participants in 16 public schools and various educational classes at Wayne State University. The analysis resulted in elimination of one statement. The initial test-retest procedure was completed by 68 participants in 5 public schools, using the remaining 56 statements. Within the five resulting factors, more than 50% of the items loaded high on more than one factor, failing to meet the criteria for the test-retest. Therefore, these items were eliminated, leaving 22 items for a final test-retest. Sixty-seven participants from one public school and graduate educational classes from Wayne State University completed the instrument.36

Likewise, Wenke’s study compared the attributes and characteristics needed to be an effective secondary principal today with those attributes and characteristics required in the past, from religious leadership to military-style leadership to the restricting movement of today, the study traces changes in the requirements for leadership today.

Findings of the study revealed that the attributes and characteristics necessary to be an effective secondary principal today have changed from the past. While the principal is still viewed as the “bottom-line” leader and must coordinate the every-day decisions and daily activities of the school, he or she must share the responsibility, and power with additional stakeholders – students, staff, parents, and community.

Today’s secondary principal must have excellent human relations' skills, communication skills, and knowledge of current and future educational trends. The effective principal must serve as a role model to his or her constituents, setting the tone and climate for the secondary school – which is critical to the success of the school.37

Bixler’s study provided an inventory of suggested primary qualifications and requirements for instructional directors in the public high schools. Major research findings indicated that the qualifications that

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12 Sara Johnson Bixler, “The Qualifications and Responsibilities of Instructional Directors as Perceived by Teachers and Principals on Selected High School Campuses in Texas Education Service Center, Region 20,” (AAC 9718297 ProQuest-Dissertation Abstracts, DA1-A 57/12, June 1997), 4991.
received the recommendations from both teachers and principals included (1) at least five years’ teaching experience, (2) strong communication skills, (3) Bachelor’s degree with additional specialized training or a master’s degree in the particular subject area, and (4) knowledge of teacher appraisal system and instructional leadership training.

The recommended responsibilities included (1) administrative responsibilities – budgeting, department vision, coordinating with other departments, (2) mentoring new teachers, (3) meeting with department members each grading period, (4) assisting in the employment of new teachers, and (5) coordinating throughout the grades and campuses.\(^\text{12}\)

Parson’s study described and compared the skills needed in order to be a successful principal. Aspiring principals enrolled in CSLA (California School Leadership Academy), and experienced principals’ perceptions were used to describe and rate the skills. The researcher also sought to understand the reasons behind the frustrations of beginning principals by comparing the perceptions of aspiring principals with the perceptions held by experienced principals concerning the needed job skills.

The study’s implications for aspiring principals included (1) understanding the importance of knowing a variety of decision and problem solving techniques, (2) understanding the importance of collecting and analyzing data, (3) creating a clear vision for effective teaching and
learning, and (4) recognizing the importance of living the vision and communicating it to various audiences.\textsuperscript{38}

Consensus appears on the literature regarding the dependence of effective educational leadership upon the leader's ability to communicate.

John's study also determined the communication competencies necessary for effective educational leadership as perceived by public school principals. The revised communication activity questionnaire asked principals to rate their perceptions on the importance of personal confidence levels, in twenty identified communication skills in four different directions – toward superiors, co-workers, subordinates, and clients- using a Likert scale.

Results of the study showed that principals perceived all twenty identified competencies to be important. Consistently ranking among the top five in importance were: relationship building, giving feedback, soliciting feedback (interpersonal skills), and public relations (organizational skills).

Results also indicated that principals perceived themselves to be confident in the performance of all twenty communication skills.

Consistently ranking in the top three in all four directions were routine information exchange, relationship building, and listening.  

A exploratory study conducted by Walton, however, sought to examine relationships among teachers’ global-mindedness, their demographic characteristics and their classroom communication competence. The results of the study confirmed that age, history of international travel, and religion are salient predictors of teachers’ global-mindedness. Education was not a significant predictor to teacher global-mindedness of or any of the subscales but global-mindedness had a direct effect on teachers’ classroom communication skills.

The findings of Lesniak served as a basis for examining the vertical communication existing among the faculty teachers and administrators of Region IV who were the subject of the present study. He examined the difficulties in the communication relationship among superiors and subordinates in relation to other attributes of the communication system within the organization.

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The statistical findings suggested that a close vertical communication relationship can be beneficial to a unit member. This statement was based on the evidence supporting the advantages proposed for closer communication relationship especially when exporting job progress. The nature of the benefit received from a close vertical exchange relationship can be expected to be better informed, more involved with decisions dealing with policy and managerial problems, more satisfied with organizational outcomes and most probably will enjoy better relations with most, if not all, organization members. The practical result of the study seems to suggest that the exchange process is building a feeling of commitment for the employee.

Both studies of Todt and Gregory were used as basis for examining the upward communication practices involved in this research study. Gregory described the teachers' participation in curriculum decision making by determining the types and frequency with upward communication. They used to influence much decision. It was reported that more written than oral messages were used as well as more formal networks than informal ones were used.

Furthermore, teachers as a group than as individuals sent more messages. Secondary teachers were found to have sent more messages.

as individuals than was expected while the elementary teachers sent fewer messages as individuals than was expected.

The study of Adegbola\textsuperscript{43} revealed the barrier facing and blocking the easy flow of upward communication in secondary schools in Orido, Nigeria. The blockade to upward communication and its utilization was composed of five major areas: human relations, the use of power, sympathy for the staff member, attitude towards criticism, and staff participation in decision making.

Sixty-five percent of the teachers strongly condemned the attitudes of their principals because of poor leadership. They accused the over-all administrative approach of their principals as demoralizing and causing setback to moral and academic standards of the school. Only a small number of the teachers favored the actions of their principals. And there was an overall lack of cooperation among school administrators and teachers.

Heath\textsuperscript{44} made an investigation to determine if barriers to effective communication perceived by subordinates (faculty persons) differed from those perceived by superiors (department chairpersons). Communication


\textsuperscript{44} Deborah Davis Heath, “Barriers to Effective Communication as Perceived by Faculty and Chairpersons in Private Undergraduate Educational International,” (Dissertation Abstract International, Sept.-Oct. 1983), 932 – A.
barriers in three private undergraduate educational institutions were examined. The findings revealed that the faculty and chairpersons shared common perceptions of most barriers. The chairpersons rated the barriers higher than the faculty though no significantly higher. The five top ranking barriers for the faculty and chairpersons included:

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<tr>
<th>Faculty</th>
<th>Chairperson</th>
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<tr>
<td>1. Withholding information</td>
<td>1. Faculty translation</td>
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<tr>
<td>2. Lack of coherence</td>
<td>2. Concealment of thoughts</td>
</tr>
<tr>
<td>3. Defensiveness</td>
<td>3. Defensiveness</td>
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<tr>
<td>4. Lack of feedback</td>
<td>4. Premature jumping to conclusions</td>
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<tr>
<td>5. prematurely jumping to conclusions</td>
<td>5. Withholding information</td>
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The major contribution of this study was that it identified the difficulties as well as the common perception of barriers to effective communication among the members of a department or educational institutions. Identification of the barriers served as a basis on which to conduct workshops or training experiences in developing better
communication skills, specifically piloted to the common needs of a department or institution.

METHOD

This chapter deals with the study’s theoretical framework and methodology.

The first part, the theoretical framework, showcase the study’s foundation in terms of the written theories already proven and published. The other part, the research methodology, discusses the nature of the proposed study, its research universe and samples, the sampling design, instrumentation, data gathering design and date processing design.

THEORETICAL FRAMEWORK

This study is anchored on Stephen Covey’s theory that
According to Ludlow and Panton, managers need to be effective communicators to achieve positive results in today’s organization. In the school setting, school principals must also be effective communicators to avoid problems that will hinder an ideal daily operation of the school system.

Razik and Swason emphasized that the quality of a school’s communication seriously affects the nature of its effectiveness.

Sergiovanni cited the top three proficiencies on communication skills that must be possessed by a school principal. These proficiencies are following: (1) persuasively articulating their beliefs and effectively defend their decisions, (2) writing clearly and concisely so that the intended audience understands the message, and (3) applying facts and data to determine priorities.

Communication involves certain processes, materials, elements, methods, approaches and strategies that influence the effectiveness of communication. That is, the moment a person enters into this special relationship with another person, he begins to change the very nature of

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46 Razik and Swason, 231.

communication with them. They begin to build trust and confidence with each other. In this context, the value of a private visit with each employee, a private lunch with a business associate, a private chat with a client or customer should be considered – a time when the attention is focused upon a person, upon his or her interests, concerns, needs, hopes, fears, and doubts.

To be effective in communicating, the school principal must know these basic things: (1) communication is not a one-way affair but an interaction process between the school principal and the teachers/employees, (2) feedback from the teachers is tremendously important for the principal since it will help him amend, reinforce, or change his message as necessary, and (3) the principal must not only encode the message correctly but must know what channels to use.48

Interpersonal communication, according to Cooper, is concerned with the relational as well as the content message of communication. It is through communication that relationships are developed, maintained and terminated.49

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Thus, school managers must possess a well-developed repertoire of interpersonal communication skills in order to establish, maintain, and promote effective interpersonal relationships in the school system.

**RESEARCH METHODOLOGY**

**Research Design**

The study employed the descriptive research method. The researcher strived to explore, analyze, decipher and report the present status, problems and issues of the communication system of the schools in the Southern Tagalog Region with a view of getting groups of classified, generalized and interpreted data for the guidance or practice of the administrative staff in the new millennium.

**Problem, Its Variables and Measures**

The study was composed of nine sub-problems.

The first sub-problem described the administrators’ communication competencies along with the following variables: informative, affective, imaginative, ritualistic, and persuasive messages. Frequently, ranking, weighted arithmetic mean and chi-square statistics were used as statistical tools.
The second sub-problem exposed the abilities of the respondents as communicators. The variables used were verbal and written communication and its measures were weighted frequency, weighted arithmetic mean, and ranking.

The third sub-problem dealt with the extent of the administrators’ ability to act on the following variables as sender, message formulators, channel users, decoders, and feedback givers. Frequently, weighted arithmetic mean, ranking, standard deviation and t-test were utilized in the analysis.

The fourth sub-problem described the communication barriers in terms of organization size, selective perception, coding and decoding, filtering and information overload. Frequently, weighted arithmetic mean, and ranking were used.

The fifth sub-problem discussed the problems and difficulties encountered by the school administrators along with some areas of management. Ranking was used in treating the data.

The sixth sub-problem discussed the perceived problems and difficulties met by the school administrators that can distort the communication process. With this, regression analysis was used.

The seventh sub-problem described the respondent’s preferred communication style. Ranking was used.
The eight sub-problem revealed the degree of communication efficiency of the school managers as viewed by the respondents. Weighted arithmetic mean and ranking were used.

The ninth sub-problem discussed the empirical values that can be derived from the study’s findings.

**Research Universe**

Region IV was the research locale of this study. Commonly known as the Southern Tagalog Region, it was the researcher’s choice since this region has a unique environment. The entire region has different languages and thus communication plays an important role in the day-to-day operation of the school system. The researcher believed that communication problems largely take place in this area.

The region is composed of eleven provinces and eleven cities geographically located either on an inland or an island. The eleven provinces are as follows: Aurora, Batangas, Cavite, Laguna, Marinduque, Occidental Mindoro, Oriental Mindoro, Quezon, Palawan, Rizal and Romblon. On the other hand, the eleven cities are Antipolo, Batangas, Calapan, Cavite, Lipa, Lucena, Marikina, Puerto Princesa, San Pablo, Tagaytay, and Trese Matirez.
Elementary and high school principals, elementary district supervisors, elementary and secondary school teachers were included in the research universe.

**Research Sample**

The samples of the study was comprised of randomly selected high school principals, elementary school district supervisors, elementary school principals and selected teachers both in the secondary and elementary in the Southern Tagalog Region. The procedure used in choosing the samples was the systematic and purposive random sampling.

The selection of division-respondents utilized the purposive random sampling while the selection of principal-respondents and teacher-respondents used systematic random sampling.

The study's Division respondents were Batangas Province and Batangas City, Laguna Province including San Pablo City, Cavite Province and Cavite City.
The study's samples were broken down as follows:

<table>
<thead>
<tr>
<th>Province</th>
<th>Elementary</th>
<th>Secondary</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>DS</td>
<td>ESP</td>
</tr>
<tr>
<td>Batangas</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Cavite</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Laguna</td>
<td>10</td>
<td>10</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>City</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Bantangas</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Cavite</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>San Pablo</td>
<td>2</td>
<td>4</td>
</tr>
</tbody>
</table>

**Data Gathering Design**

The researcher prepared a letter addressed to the DepED Regional Director to ask permission to administer the questionnaire. Another letter was prepared addressed to the different Division Superintendents. After the approval, the researcher personally conducted the administration of the study's questionnaire.

Retrieval was done according to the availability of the respondents.

**Questionnaire**

The research instrument used was the questionnaire. This questionnaire stipulated information on the essential elements of the communication process and the problems encountered in the process.
The questionnaire consisted of two parts – the personal data and the questionnaire proper.

As mentioned, the questionnaire was pre-tested in the Division of Lucena City and Quezon. The purpose of the said pre-testing was to eliminate questions that were irrelevant, vague and nonsense. Questions that have the same meanings were then removed. Feedbacks, comments and suggestions that were relevant were taken for further improvement of the questionnaire. The questionnaires were also subjected to validity and reliability tests.

There were five (5) district supervisors, five (5) elementary school principals, five (5) secondary school principals, five (5) elementary grade teachers and five (5) secondary school teachers who participated in the dry-run.

There were two sets of questionnaire: Set I for school heads which included elementary and secondary school principals and district supervisors, and Set II for elementary and secondary teachers.

**Set I. School Administrator’s Questionnaire.**

Part I dealt with questions on the demographic profile of the school head respondents.
Part II included questions on the school administrators' communication abilities. This was a 5-point scaled questionnaire. This was a modified questionnaire from Pamela Cooper.

Part III dealt with the respondents' ability to act as a sender, message formulators, channel users, decoders, and feedback givers. It was also a five-point dimensional questionnaire.

Part IV of the questionnaire were questions on communication barriers. This time a 5-point Likert scale was used. This was also a modified version of Cooper’s questionnaire.

Part V with the problem on communication process being encountered by the school managers.

Finally, a preferred questionnaire on the principal's communication style was included. It showcased some situational problems on communications to test the school administrators' communication style. This was a modified version of Lussier's Determining Your Preferred Communication Style.

Set II. Teacher’s Questionnaire.

Part I of the said questionnaire dealt with the respondent's demographic profile.

Part II was a 6-dimensional questionnaire on the principals’ communication competencies along with selected variables. This was a
modified questionnaire from Cooper’s Personal Report of Communication Apprehension.

Part III included questions on the school administrators’ communication abilities. This was a 5 – point scaled questionnaire. This was also a modified questionnaire from Cooper.

Part IV dealt with the respondents’ ability to act as a sender, message formulators, channel users, decoders, and feedback givers, which was a five-point dimensional questionnaire.

Part V of the questionnaire were questions on communication barriers, this time a 5-point Likert scale. Again, this was a modified version of Cooper’s questionnaire.

Part VI dealt with the problems on communication process being encountered by the school managers.

Finally, a preferred questionnaire on the principal’s communication style was included. It showcased some situational problems on communications to test the school administrators’ communication style. This was a modified version of Lussier’s Determining Your Preferred Communication Style.

**Data Processing Design**

In terms of interpretation, qualitative description was applied after the necessary mathematical computations.
On the respondents’ communication abilities, the following were applied:

<table>
<thead>
<tr>
<th>Mean Range</th>
<th>Qualitative Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.51 – 5.00</td>
<td>Strongly Agree</td>
</tr>
<tr>
<td>3.51 – 4.50</td>
<td>Agree</td>
</tr>
<tr>
<td>2.51 – 3.50</td>
<td>Undecided</td>
</tr>
<tr>
<td>1.51 – 2.50</td>
<td>Disagree</td>
</tr>
<tr>
<td>1.00 – 1.50</td>
<td>Strongly Disagree</td>
</tr>
</tbody>
</table>

On the respondents’ ability to send messages, the following were utilized:

<table>
<thead>
<tr>
<th>Mean Range</th>
<th>Qualitative Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.00 – 1.50</td>
<td>behavior did not appear</td>
</tr>
<tr>
<td>1.51 – 2.50</td>
<td>opportunities were present but not demonstrated</td>
</tr>
<tr>
<td>2.51 – 3.50</td>
<td>behavior demonstrated occasionally</td>
</tr>
<tr>
<td>3.51 – 4.50</td>
<td>behavior demonstrated consistently with average effectiveness</td>
</tr>
</tbody>
</table>
4.51 – 5.00 behavior demonstrated consistently with obvious skills

On the respondents' assessment of communication skills, the following were used:

<table>
<thead>
<tr>
<th>Mean Range</th>
<th>Qualitative Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.00 – 1.50</td>
<td>Never</td>
</tr>
<tr>
<td>1.51 – 2.50</td>
<td>Occasionally</td>
</tr>
<tr>
<td>2.51 – 3.50</td>
<td>Frequently</td>
</tr>
<tr>
<td>3.51 – 4.00</td>
<td>Always</td>
</tr>
</tbody>
</table>

**RESULT AND DISCUSSION**

This chapter presents the summary of findings on how the teacher-respondents perceive their administrators’ communication competencies and their ability to send/receive informative messages, affective messages, imaginative messages, ritualistic messages, and persuasive messages regarding the administrators’ feelings about communicating with other people when engaging in group discussions, meetings, interpersonal conversation, public speaking, and doing written communications.
Likewise, it tries to gauge their abilities to act in different communication processes such as sending/encoding messages, formulating messages, using channels, decoding/receiving messages, and giving feedback. It also shows the effects of the different communication barriers on the school principals and district supervisors, their assessment on their communication skills and their preferred communication styles.

**SUMMARY OF FINDINGS**

After applying the proper statistical treatment, the following findings were arrived at:

1. **DEMOGRAPHIC PROFILE OF RESPONDENTS**

That Batangas, Cavite and Laguna were the province division. Each province division has 10 district supervisors, 10 elementary school principals, 5 secondary school principals, 15 elementary teachers and 10 secondary school teachers with a total of 50 respondents from each division. The city divisions were Batangas City, Cavite City and San Pablo City which include 2 district supervisors, 4 elementary school principals, 2 secondary school principals, 5 elementary school teachers and 4 secondary school teachers with a total of 17 in each division.
That the biggest bulk of school administrators were between 50-59 years of age while elementary and secondary school teachers were between 40-49.

That out of the 201 respondents, only 23 were males and 178 were females. Only 19 were listed as single, 172 were married and 10 were widow/widower.

That educational attainment was proven to be the springboard to be promoted to higher position. The higher the educational level, the higher the position attained.

2. MESSAGE TRANSMISSION MEDIA USED BY ADMINISTRATORS

That face to face communication was the most used medium of communication in English with 32 responses or 44.44% from district supervisors, 33 or 42.86% from elementary school principals, 52 or 43.33% from elementary school teachers, 18 or 42.86% from secondary school principals and 34 or 40.78% from secondary school teachers.

That many of the administrators used memos as form of written communication according to 24 or 33.33% district supervisors, 30 or 35.71% elementary school principals, 42 or 35% elementary school teachers, 18 or 42.85% secondary school principals, and 34 or 40.48% secondary school teachers.
That many of the administrators have rated themselves 10, extremely fluent in English oral communication. Many elementary school teachers agreed that they are extremely fluent and gave a 10 rating while secondary school teachers rated them nine (9) only.

That many of the administrators have rated themselves 10, extremely fluent in English written communication. Elementary school teachers also find their administrators extremely fluent and gave a rating of 10 while secondary school teachers gave a nine (9) rating.

That majority of the administrator-respondents rated themselves 10 extremely fluent in Filipino oral communication and it was agreed upon by elementary and secondary school teachers.

That majority of the elementary school teachers and secondary school principals gave a rating of 10, extremely fluent in Filipino written communication. Many of the district supervisors, elementary school principals and secondary school teachers also find the administrators extremely fluent.

3. ADMINISTRATORS’ ATTITUDES WHEN COMMUNICATING WITH OTHER PEOPLE

That the most evident behavior manifested by school administrators is being comfortable while participating in group discussion. District
supervisors gave a rating of 1.33, elementary school principals 1.48 and secondary school principals 1.38 equivalent to strongly agree.

That elementary school administrators and district supervisors were consistent that they were calm and relaxed when participating in meetings with a weighted mean of 2.05 agree and 1.28 strongly agree respectively. Secondary school principals agreed that they were relaxed when answering questions at a meeting while a weighted mean of 1.71.

That both elementary school principals and district supervisors agreed that they have no fear of speaking up in conversations with weighted means of 1.84 and 1.70 respectively. Secondary school principals were very calm and relaxed in a conversation with a weighted mean of 2.10 agree.

That both elementary school principals and district supervisors conformed that they have no fear of giving a speech with weighted means of 2.05 and 2.17 respectively. Secondary school principals agreed that they face the prospect of giving a speech with confidence that earned a weighted mean of 2.33.

That district supervisors strongly agreed that they were confident in issuing memoranda to all concerned with a weighted mean of 1.27. Secondary school principals also agreed with a weighted mean of 1.76 while elementary school principals make sure that their grammar is correct when writing a letter with a weighted mean of 1.67.
4. TEACHERS’ PERCEPTION ON THEIR PRINCIPAL’S COMMUNICATION COMPETENCIES

A. Informative messages

That in terms of sending informative messages, elementary school teachers noted that their administrators ask effective questions to assess teacher understanding of information given in lectures with a weighted mean of 4.27, demonstrated consistently with average effectiveness. Secondary school teachers rated their principals 4.43 in terms of structuring informative messages effectively by using devices such as initial partitions, transitions, internal summaries and concluding summaries.

On the receiving ability, elementary school teachers delineated that their administrators were able to identify main point of teachers’ comment with a weighted mean of 4.55, demonstrated consistently with obvious skills. Secondary teachers identified that administrators can formulate questions that probed for the informative content of messages with a weighted mean of 4.24.

That both the elementary and secondary school teacher-respondents perceived that their administrators both demonstrated their ability to send and receive informative messages consistently with average effectiveness. It obtained average weighted means of 4.10 and
4.28 respectively in terms of sending and 4.32 and 4.17 respectively in terms of receiving.

B. Affective Messages

That elementary school teachers described that their administrators demonstrate energy and enthusiasm when relating to teacher with a weighted mean of 4.50 which means it is demonstrated consistently with average effectiveness. Secondary school teachers also find their principals consistent and effective in the demonstration of interpersonal openness, warmth, and positive regard for teacher with a weighted mean of 4.26.

In receiving affective messages, teachers noted that their principals/administrators offer advice tactfully if necessary with a weighted mean of 4.53, behavior demonstrated consistently with obvious skills by elementary school administrators and 4.38, behavior demonstrated consistently with average effectiveness by secondary school administrators.

Overall, administrators demonstrate consistently with average effectiveness their ability to send affective message with weighted means of 4.38 and 4.15 respectively and have also demonstrated consistently with average effectiveness their ability to receive affective messages with average weighted means of 4.38 and 4.19 respectively.

C. Imaginative Messages
That elementary school teachers believed that their administrators use vivid descriptive language with a weighted mean of 4.33, demonstrated consistently with average effectiveness. Secondary school teachers observed that their principal uses expressive vocal and physical behavior with 4.57 mean, behavior demonstrated consistently with obvious skills.

In terms of receiving, elementary school teachers revealed that their administrators were non-directive when encouraging teachers' creativity with 4.40 mean while the secondary school respondents viewed that their principal responded to the imaginative messages enthusiastically with a mean of 4.76, behavior demonstrated consistently with obvious skills.

In general, elementary and secondary school administrators demonstrated consistently with average effectiveness their ability to send imaginative messages with average means of 4.32 and 4.42 respectively. Elementary school administrators also demonstrated consistently with average effectiveness their ability to receive imaginative messages with average mean of 4.38 while secondary school administrators demonstrated this ability with obvious skills with an average mean of 4.51.

D. Ritualistic Messages

That in sending ritualistic messages, demonstrating appropriate behavior in performing everyday speech acts such as greeting, turn-
taking, and leave-taking got a 4.55 weighted mean as described by elementary school teachers. Modeling appropriate social amenities in ordinary classroom interaction best described their principals according to secondary school teachers with a weighted mean of 4.33, behavior demonstrated consistently with average effectiveness.

On the receiving ability, elementary school principals/administrators recognition of appropriate and inappropriate performances of social amenities got a weighted mean of 4.45 as rated by the teachers. On the other hand, secondary school teachers described that their principal recognizes when teachers perform everyday speech acts appropriately with a weighted mean of 4.48.

As a whole, elementary and secondary school principals/administrators demonstrated their ability on sending and receiving ritualistic messages consistently with average effectiveness.

E. Persuasive Messages

That in terms of sending persuasive messages, both group of respondents agreed that administrators offer sound reasons and evidence in support of ideas. For elementary school teachers this behavior is demonstrated consistently with obvious skills by their administrators with a weighted mean of 4.51 while secondary school teachers gave a weighted mean of 4.36, demonstrated consistently with average effectiveness. In receiving persuasive messages, administrators recognize underlying
assumptions of arguments of others according to elementary and secondary teachers with weighted of 4.55 and 4.36 respectively.

In totality, school administrators in both the elementary and secondary level demonstrated their ability in sending and receiving persuasive messages consistently with average effectiveness with 4.35 and 4.20 mean respectively.

5. PRINCIPALS/ADMINISTRATORS’ ABILITIES TO ACT IN DIFFERENT COMMUNICATION PROCESSES

A. Sending/Encoding Messages

That elementary and secondary school administrators clarify ideas, desires and purpose before communicating which got a weighted mean of 1.19 strongly agree for the district supervisors and 1.69 agree for elementary school principals. While secondary school principals describe well ideas to fellow workers/subordinates with a weighted mean of 1.48 strongly agree.

In summary, both the elementary and secondary school principals agreed that they have the ability to send/encode messages with average means of 1.83 and 1.77 respectively while district supervisors strongly agreed with 1.45 average mean.

That elementary and secondary teachers ranked first that their principals/supervisors show command of the language for the smoother
flow of the message, with a weighted mean of 2.19 agree and 2.57 undecided respectively.

That elementary and secondary school teachers believed that their administrators still need to improve their ability to send/encode messages as they gave an average weighted mean of 3.98 and 4.20 respectively.

B. Formulating Messages

That both the secondary school principals and district supervisors strongly agreed that they use clear, simple and concrete language with 1.38 and 1.22 weighted means respectively. While both the elementary school principals and district supervisors organize message carefully with weighted means of 1.60 agree and 1.22 strongly agree. Secondary school principals draft messages with receiver's needs clearly in mind with a weighted mean of 1.38.

In summation, district supervisors gave a weighted average of 1.27 strongly agree, 1.70 agree for the elementary school principals and 1.42 strongly agree for secondary school principals.

That elementary school teachers ranked last their administrators' ability to use clear, simple and concrete language with a weighted mean of 4.37 disagree while organizing messages carefully and drafting messages with the receiver's need clearly in mind ranked first with a weighted mean of 4.32 disagree.
Secondary school teachers gave the lowest rating to their administrators’ ability to formulate brief and direct message using familiar words with 4.67 mean, strongly disagree. Use of clear, simple and concrete language ranked first with a weighted mean of 4.43 disagree.

As a whole, elementary and secondary school teachers rated their administrators' ability to formulate messages with an average weighted mean of 4.34 disagree and 4.56 strongly disagree.

C. Using Channels

That district supervisors see to it that they provide a clear channel for transmitting information which got a weighted mean of 1.33 strongly agree. Elementary school principals keep the line of communication open first with a weighted mean of 1.64 agree while secondary school principals put in mind first that they clarify formal communication with a weighted mean of 1.29 strongly agree.

Overall, elementary and secondary school principals and district supervisors rated themselves 1.89 agree, 1.60 agree and 1.53 in using channels.

That elementary school teachers said that least manifested by their administrators is keeping the line of communication open with the lowest weighted mean of 4.43 disagree. Although utilizing informal channel such as the grapevine got the highest weighted mean of 4.08, it is also equivalent to disagree. Meanwhile, secondary school administrators
have the least ability to clarify formal communication with 4.45 mean. They 
\textit{disagreed} that administrators provide a vehicle for obtaining reactions to 
ideas that are being considered which ranked first with a weighted mean 
of 4.15.

Both group of respondents recorded the same average weighted 
mean of 4.30 \textit{disagree}.

\textbf{D. Decoding/Receiving Messages}

That all of the respondents find it easy to put together exactly what 
was said when they listen to people in authority. District supervisors rated 
themselves 1.50 \textit{strongly agree}, 1.79 \textit{agree} for elementary school 
 principals and 1.76 \textit{agree} for secondary school principals.

On the outset, the three groups of administrators rated themselves 
with average weighted scores of 3.26, 3.43, and 3.33 respectively which 
reveals that they are \textit{undecided} whether they have enough ability to 
decode/receive messages.

That administrators are somewhat afraid to receive new information 
acquired the highest rank with a weighted mean of 2.50 \textit{agree} for 
elementary school teachers while secondary school teachers feeling 
tensed when listening as a member of a social gathering got a weighted 
mean of 2.17 \textit{agree}. 
As a whole, the respondents are both undecided whether their administrators have the ability to decode/receive messages as elementary school teachers rated it 3.27 and secondary school teachers 3.26.

E. Using Feedback

That the district supervisors strongly agreed that they ensure feedback is intended to be helpful to the receiver with a weighted mean of 1.34. While elementary and secondary school principals both agreed that they monitor the environment by observing naturally occurring informational use, other individuals and how other respond with weighted means 2.00 and 1.52 respectively.

In general, all of them agreed that they have the ability to give feedback with 2.26 average mean for elementary school principals, 1.75 for secondary school principals and 2.21 for district supervisors.

That both the elementary and secondary teachers were both undecided whether their administrators present feedback without judgment with the highest weighted mean of 3.20 and 3.33 respectively.

Overall, the respondents both disagreed that feedback is utilized in the communication process by their administrators as elementary and secondary school teachers gave 4.04 and 4.00 rating on this aspect.
6. EFFECTS OF THE DIFFERENT COMMUNICATION BARRIERS, ASSESSMENT OF COMMUNICATION SKILLS AND PREFERRED COMMUNICATION STYLES

A. Effects of the Different Communication Barriers

That district supervisors put a message in the most favorable terms possible with a weighted mean of 1.53 agree. Secondary school principals ranked first synthesizing of reports, messages, memos, etc. with 1.33 mean, strongly agree. Elementary school principals rated both these aspects first with 1.95 mean, agree.

That elementary school teachers perceive that administrators process incorrect information with a weighted mean of 2.50 agree while secondary school teachers are undecided whether their administrators alter and district information with a weighted mean of 2.78.

B. Assessment of Communication Skills

That both the elementary and secondary school principals always project self-confidence and speak confidently before their teachers with weighted means of 3.74 and 3.76 respectively. Also, secondary school principals always make their reports accurate, concise, clear and well structured with 3.76 mean. On the other hand, district supervisors always
think carefully about a message before deciding how to communicate it with 3.92 mean.

**C. Preferred Communication Style**

That all of them have exactly the same attitude when dealing with different communication situation. That when someone comes to them and request to design a special training in communication approach, majority answered that they will convey understanding and support, help clarify what is to be done, and offer ideas. That 59.5% of the elementary school principals, 57.1% secondary school principals and 58.3% of district supervisors will do it.

That when someone comes to them to ask favor on the administration of the achievement test of students, majority will be supportive and will make changes together as a team with 69% responses from elementary school principals, 57% from secondary school principals and 86.1% from district supervisors.

That when someone calls them for a confidential meeting and tells that she needs some information to solve a problem, majority will respond in a manner that conveys personal support and offer alternative ways to solve the problem with 61.9% responses from elementary school principals, 52.4% from secondary school principals and 77.8% from district supervisors.
That when they have a supervisor work to be executed and completed in three days, majority will decide together what to accomplish with somebody who is experienced. It obtained 71.4% responses from elementary school principals, 57.1% from secondary school principals and 86.1% from district supervisors.

That when a PTA project needs to be completed before the evaluation, majority will explain the situation with the PTA president and together come to a solution to the problem. There were 59.5% answers solicited from elementary school principals, 81% from secondary school principals and 86.1% from district supervisors.

**CONCLUSIONS**

After evaluating the findings gathered, the following conclusions were thus made:

1. **ADMINISTRATORS’ COMMUNICATION COMPETENCIES**

   **A. Informative Messages**

   That administrators demonstrated their ability to send and receive informative messages consistently with average effectiveness.

   **B. Affective Messages**

   That administrators in the elementary and secondary levels have demonstrated consistently with average effectiveness their ability to send and receive affective messages.
C. Imaginative Messages

That elementary and secondary school principals/administrators demonstrated consistently with average effectiveness their ability to send imaginative messages. Elementary school administrators demonstrated consistently with average effectiveness their ability to receive imaginative messages and secondary school administrators only demonstrated this ability with obvious skills.

D. Ritualistic Messages

That elementary and secondary school administrators demonstrated their ability on sending and receiving ritualistic messages consistently with average effectiveness.

E. Persuasive Messages

That school administrators demonstrated their ability to send and receive persuasive messages consistently with average effectiveness.

2. ADMINISTRATORS’ VERBAL AND WRITTEN COMMUNICATION ABILITIES

A. Verbal Communication Abilities

That school administrators are comfortable while participating in group discussion.

They were calm and relaxed when participating in meetings. Secondary school principals were also relaxed when answering questions
at a meeting while elementary school principals and district supervisors were not afraid to express themselves at meetings.

That elementary school principals and district supervisors have no fear of speaking up in conversations while secondary school principals were very calm and relaxed in a conversation.

That both elementary school principals and district supervisors have no fear of giving a speech while secondary school principals face the prospect of giving a speech with confidence.

**B. Written Communication Abilities**

That district supervisors and secondary school principals were confident in issuing memorable to all concerned while elementary school principals make sure that their grammar is correct when writing a letter.

3. **ADMINISTRATORS’ ABILITIES TO ACT IN DIFFERENT COMMUNICATION PROCESSES**

**A. Sending/Encoding Messages**

That elementary and secondary school administrators believed they have the ability to send/encode messages while the teachers believed that their administrators still need to improve their ability to send/encode messages.

**B. Formulating Messages**

That the administrators believed they have the ability to formulate messages while the teachers said that their administrators don’t have the ability to formulate messages.
C. Using Channels

That the administrators strongly agreed they have ability to use channels while the teachers disagreed they have it.

D. Decoding/Receiving Messages

That the administrators were undecided whether they have enough ability to decode/receive messages just like the perception of the teacher-respondents.

E. Using Feedback

That the administrators agreed that they have the ability to give feedback while the teachers disagreed that it is utilized in the communication process by their administrators.

4. EFFECTS OF COMMUNICATION BARRIERS

That because of the communication barriers, district supervisors try to put a message in the most favorable terms possible while secondary school principals synthesize reports, messages, memos, etc. Elementary school principals both put a message in the most favorable terms and synthesize reports, messages, memos, etc. All of them were undecided whether they process incorrect information while secondary school principals disagreed that they alter and district information to project favorable image.
That elementary school teachers perceived that administrators process incorrect information while secondary school teachers were undecided whether their administrators alter and distort information.

Elementary school teachers identified the weakness of their administrators in putting a message in the most favorable terms possible while secondary school teachers have observed their administrators' deficiency in synthesizing reports, messages, memos, etc.

5. PROBLEMS AND DIFFICULTIES ENCOUNTERED IN EMPLOYING/UTILIZING THE COMMUNICATION PROCESS

That administrators were not able to utilize the fax machine effectively in the communication process. They were not also able to utilize informal channel such as the grapevine to serve as gauge for employees' concern and satisfaction.

That they least manifested keeping the line of communication open and have the least ability to clarify formal communication. They do not provide a vehicle for obtaining reactions to ideas that are being considered. They still have to improve themselves in using channels.

That they weren't able to describe well ideas to fellow workers/subordinates and give accurate instruction. Administrators still need to improve their ability to send/encode messages.

That administrators do not find it easy to concentrate on what is being said and put together exactly what was said when they listen to
people in authority. They still have to improve their ability to decode/receive messages.

That they were not able to monitor the environment by observing naturally occurring informational use, other individuals and how others respond. The feedback was not utilized in the communication process by administrators.

6. PERCEIVED PROBLEMS AND DIFFICULTIES MET BY SCHOOL ADMINISTRATORS THEMSELVES

That they have difficulty in employing multiple channels to stimulate a number of the receiver's senses as well reducing messages to the simplest possible terms.

That they have difficulty to use clear, simple and concrete language and formulate brief and direct message using familiar words. Administrators lack the ability to formulate messages and they don’t have enough ability decode/receive messages.

That administrators were somewhat afraid to receive new information acquired and feel tensed when listening as a member of a social gathering.

That they weren’t able to give playback on what others communicate. They were not sure whether they give feedback without judgment.
That administrators sometimes process incorrect information and alter and distort information.

That administrators have weakness in putting a message in the most favorable terms possible and deficiency in synthesizing reports, messages, memos, etc.

7. PREFERRED COMMUNICATION STYLES

That all of them have exactly the same attitude when dealing with different communication situations. That when someone comes to them and request to design a special training in communication approach, they will convey understanding and support, help clarify what is to be done, and offer ideas.

That when someone comes to them to ask favor on the administration of the achievement test of students, they will be supportive and will make changes together as a team.

That when someone calls them for a confidential meeting and tells that she needs some information to solve a problem, they will respond in a manner that conveys personal support and offer alternative ways to solve the problem.

That when they have a supervisory work to be executed and completed they will decide together what to accomplish with somebody who is experienced.
That when a PTA project needed to be completed before the evaluation they will explain the situation with the PTA president and together come to a solution to the problem.

8. DEGREE OF COMMUNICATION EFFICIENCY OF SCHOOL ADMINISTRATORS

That administrators project self-confidence and speak confidently before their teachers. They also see to it that they make their reports accurate, concise, clear and well structured and think carefully about a message before deciding how to communicate it. They unanimously identified that they occasionally communicate via all electronic media.

RECOMMENDATIONS

On the basis of the findings and conclusion presented, the following recommendations are thus made:

1. A suitable plan has to be worked out to bring order and efficient in their internal communication system.

2. A short-term course in effective communication is urgently needed by school administrators and an expert should be hired to give the course.

3. A medium or long-range plan for improving the communication skills of supervisory and rank and file personnel as well as the teachers should be instituted.
4. A high standard in written communication should be demanded and the value of good writing and oral communication should be emphasized.

5. Administrators should also be trained in the use of new technology such as the computer, Internet and fax machine to improve their communication ability.
Prevent and Alleviate Burnout for Educators and Helping Professionals

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Prevent and Alleviate Burnout for Educators and Helping Professionals

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Abstract

Burnout is a critical issue among educators. Burnout is defined “as a syndrome of emotional exhaustion, depersonalization, and reduced personal accomplishment” (Maslach, Jackson & Leiter, 1996, p. 4). This workshop will provide prevention on burnout and provide strategies for organizations and educators to manage burnout. The workshop will explore Secondary Post Traumatic Stress Syndrome/Compassion Fatigue and its effects on individuals and organizations. Stem the tide of educator departures by treating the main cause; burnout.
References

INFLUENCE OF LABORATORY LEARNING ENVIRONMENT ON STUDENTS’ LEARNING OUTCOMES IN SECONDARY SCHOOL CHEMISTRY

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A Paper Presented at the 13th Annual Hawaii International Conference on Education Held at the Hilton Hawaiian Village Waikiki Beach Resort in Honolulu, Hawaii.

5th - 8th January, 2015
ABSTRACT

The study investigated the influence of laboratory learning environment on students’ learning outcomes in secondary school Chemistry. Specifically, the study investigated the influence of the five dimensions of laboratory learning environment on students’ performance and attitude to the learning of Chemistry. The population for the study comprised all the Senior Secondary School Three (SS III) Chemistry students in all the public secondary schools in Ondo State, Nigeria. The study adopted the descriptive research design of survey type. The sample for the study consisted of six hundred and ninety (690) students from the schools used for the study. Three research instruments were used for collection of data, namely: Questionnaire on Chemistry Laboratory Learning Environment (QLLE), Chemistry Practical Achievement Test (CPAT) and Chemistry Attitude Scale (CAS). Data collected were analysed using Analysis of Variance (ANOVA) and Multiple Regression. The result showed that there was significant relationship between five dimensions of laboratory learning environment and students’ performance in Chemistry ($F_{(4,684)}=678.96$, $P=.000$). Material environment had the highest contribution to students’ performance in Chemistry ($\beta=.345$, 34.5%). This is seconded by integration ($\beta=.219$, 21.9%), followed by student cohesiveness ($\beta=.173$, 17.3%), followed by rule-clarity ($\beta=.139$, 13.9%) while open-endedness ($\beta=.097$, 9.7%) had the lowest contribution. The result also showed that the relationship between five dimensions of laboratory learning environment and their attitude towards Chemistry was significant ($F_{(4,684)}=563.28$, $P=.000$). The result also showed that material environment had the highest contribution to students’ attitude towards Chemistry ($\beta=.645$, 64.5%). This is seconded by integration ($\beta=.267$, 26.7%), followed by student cohesiveness ($\beta=.196$, 19.6%), followed by rule-clarity ($\beta=.153$, 15.3%) while open-endedness ($\beta=.135$, 13.5%) had the lowest contribution. It is recommended among others that in order to encourage the development of scientific attitudes, teachers should make sure appropriate controls are established for these classroom environmental factors.

Keywords: Laboratory, Learning Environment, Students’ Learning Outcomes, Chemistry.
Introduction

Chemistry as a branch of science and the prerequisite subject for many fields of science contributes immensely to the technological growth of the nation. This includes agriculture, pharmacy, medicine, nursing, biochemistry and chemical engineering. Therefore, any nation that aspires to develop scientifically and technologically must pay attention to the quality of Chemistry education that is being taught in her schools. It is against this background that made the federal government of Nigeria to identify the specific objectives to be achieved in the Chemistry curriculum at the senior secondary school level in the national policy of education (2004) as follows:

- facilitating a transition to the use of scientific concepts and techniques acquired in Integrated Science with Chemistry;
- providing the students with basic knowledge in chemical concepts and principles through efficient selection of content and sequencing;
- showing Chemistry in its inter-relationship with other subjects;
- showing Chemistry and its link with industry, everyday life, benefits and hazards; and
- providing a course which is complete for students not proceeding to higher education while at the same time it is a reasonably adequate foundation for a post-secondary Chemistry course.

The policy recommends that science teaching and learning should be activity-oriented and student-centred such that students acquire relevant laboratory experiences. The achievement of these objectives will depend on and be influenced by the teacher, the students, the materials, the laboratory and how both students and teachers perceive them in relation to intended learning outcomes.

Chemistry is a core science subject and as such a credit pass in it is required before a student can be admitted in any tertiary institution for most scientific based discipline. The study of Chemistry entails the learning of concepts, established principles, laws and theories and also substantial activity-oriented laboratory work. These laboratory experiments are to demonstrate practically some of the principles taught in theory, test the validity of certain empirical chemical laws and illustrate properties of substances taught theoretically in the
classroom. Learning Chemistry means not only learning facts and concepts that describe the physical world at the atomic level, but also learning how to examine the physical evidences of chemical principles in a laboratory learning environment. Since Chemistry is a science based on experimentation, performing experiments within a laboratory setting is an important aspect of Chemistry work learning. Effective teaching and learning of Chemistry can only take place when theoretical explanations are complemented with actual practices in the laboratory. The teaching laboratory is the standard method of training students in the skills and values central to scientific investigation and important in the development of positive attitude to Chemistry. In the Chemistry laboratory, students work cooperatively in small groups to investigate phenomena. This mode of instruction has the potential to enhance constructive social interactions as well as positive attitudes and academic performance. Even though the knowledge of Chemistry to the society is very important, students’ performance in the subject as measured by their scores in Senior Secondary Certificate Examination (SSCE) is very poor.

The poor performance in sciences especially Chemistry in Senior Secondary Certificate Examination (SSCE) attests to the fact that Chemistry teaching and learning and the conditions under which they take place need to be re-examined. In recent times such a re-examination focused on assessing the laboratory learning environment of students and how laboratory can serve as a source for enhancing students’ performance in Chemistry.

The science laboratory, a unique learning environment, is a setting in which students can work cooperatively in small groups to investigate scientific phenomena. The environment in a laboratory is expected to be less formal when compared to the conventional classroom setting and presents opportunities for more interactions between students and with the teacher as well. Such greater interactions are likely to promote more positive social interactions that are ideal for creating a constructive and positive learning environment (Hofstein, Nahum and Shore, 2001).

Although teachers and students share the same learning environment, it is likely that their perceptions on such a learning environment differ. The nature of the Chemistry laboratory learning environment can make a difference on how students are motivated to achieve their set goals. The physical environment of the laboratory in terms of facilities, space, lightening, ventilation, workbenches and stools in the laboratory influences the safety and comfort of students and so may influence students’ attitudes towards a particular subject and the learning of such a subject. It can also influence the personal development of students. The laboratory
learning environment in which Chemistry teaching and learning occur is therefore likely to have a major influence on students’ learning outcomes and impact positively in enhancing Chemistry teaching and learning. Student perceptions of their learning environment influence how and to what extent they learn and retain knowledge (Aldridge, Fraser & Wood, 2002; Luketic & Dolan, 2014). This is not unique to laboratory learning, and has been the impetus for classroom environment research for several decades. There are different scales which assess classroom environment. Each scale has been classified according to Moos’s (1974) scheme for classifying human environments. The dimensions of human environments include relationships, personal development and system maintenance as well as change (Moos, 1987). This theoretical model examines learning environments through relationships, personal development, and systems maintenance/change. Relationship dimensions are those relating to the nature and intensity of personal relationships. Personal development dimensions refer to the path through which knowledge development progresses. System maintenance and system change dimensions refer the orderliness, clarity control and responsiveness to change in the environment (Moos, 1987). This work was built on Walberg’s research on psychosocial learning environments. This research explored the multidimensional nature of a psychological model of productivity.

Fraser later refined Moos’s work to make it more appropriate, initially to describe classroom learning environments, and then science learning environments. Fraser’s work with McRobbie and Giddings identified five dimensions: student cohesiveness, open-endedness, integration, rule clarity and material environment. Student cohesiveness describes how well students know each other’s, work well together, and support one another. Open-endedness refers to students’ opportunities to design their own research and pursue individual interests to enhance their personal constructions of scientific knowledge. The integration dimension characterizes how laboratory activities are connected to theoretical material taught in the lecture portion of the science classroom. Rule clarity refers to the extent of the formal rule structure and how it is followed within the classroom. Material environment describes the adequacy of their laboratory materials and equipment. The Science Laboratory Environment Inventory was developed as a measure of these aspects of science learning environments (Fraser et al. 1993).

A few environment studies involving the concept of laboratory learning environment have been reported in Nigeria (Fraser, Okebukola and Jegede, 1992; Busari, 1993; Iroha, 2004; Aladejana and Aderibigbe, 2007). According to Fraser, Okebukola and Jegede (1992),
the various dimensions of the science laboratory environment, namely, student cohesiveness, open-endedness, integration, rule clarity, and material environment are substantially associated with students’ attitude towards science laboratory work. The laboratory learning environment allows students to interact with instructional materials through hands-on experiences, and through minds-on and inquiry-oriented activities.

From the foregoing, it can be argued that the reported poor performance of students in Chemistry at the secondary school level might be due to both students’ perception of the laboratory learning environment and the failure of teachers to conduct laboratory activities in a way that will make students more active participants in Chemistry teaching and learning situation. A learning environment that allows active participation of students in the learning process makes it possible for the students to have control over their learning and this leads to improvement in students’ learning outcomes. The poor performance in Chemistry and other related subjects may be reflecting the inadequacy inherent in the laboratory learning environments at the school level. It also appears from the review of available literatures, that the influence of laboratory learning environment on students’ learning outcomes in secondary school Chemistry class has not been extensively looked into in Nigeria. This paucity of literatures in this regard gives room for a need to conduct a scientific study on Chemistry laboratory learning environment. The focus of the present study was therefore to investigate the influence of laboratory learning environments on their learning outcomes in Chemistry.

**Statement of the Problem**

In recent times, poor performance of students in Chemistry in the Senior Secondary School Certificate Examination (SSCE) has generated serious concern among science educators. Consequently, researchers have worked on several causative factors such as inadequate laboratory equipment, teachers’ qualification and students’ inability to acquire some basic science process skills. In an attempt to address the problem highlighted above, some researches have been carried out through the use of carefully planned instructional strategies and models to improve the status of Chemistry teaching and learning. Despite all these efforts, students’ performance in Chemistry has remained consistently poor at the Senior Secondary Certificate Examination. (SSCE). All these strategies gave a little
improvement over the conventional lecture method, which is being used in our secondary schools. However, there seems to be a neglect of other important factors such as laboratory learning environment and patterns of interaction; hence, this study is to fill the existing gap.

**Purpose of the Study**

The purpose of this study was to investigate the influence of laboratory learning environment on students learning outcomes in Senior Secondary School Chemistry. Specifically the objectives of the study were to:

1. investigate the relationship between the five dimensions of laboratory learning environment and students’ performance in Chemistry;
2. investigate the relationship between the five dimensions of laboratory learning environment and students’ attitude towards Chemistry.

**Hypotheses**

The following hypotheses were therefore generated;

H₀₁: There is no significant relationship between the five dimensions of laboratory learning environments and students’ performance in Chemistry.

H₀₂: There is no significant relationship between the five dimensions of laboratory learning environments and students’ attitude towards Chemistry.

**Research Method**

The study adopted the descriptive research design of survey type. The population for the study comprises all the Senior Secondary Three (SS111) Chemistry students in all the public secondary schools in Ondo State. The study focuses on public schools located in the three geopolitical zones of the State. Two local government area councils were randomly selected in each zone for the study. Purposive sampling technique was also used to select four (4) Secondary Schools from each Local government area for a total of twenty four (24) Secondary Schools being involved in the study. The choice of the schools used for the study was based on the following criteria, schools with;

i. a standard and functional Chemistry laboratory and
ii. qualified and experienced Chemistry teachers.

In each school selected for the study, intact class of Chemistry students was involved in the study. The sample for the study consisted of six hundred and ninety (690) students from the schools used for the study. Three instruments tagged Questionnaire on Chemistry Laboratory Learning Environment (QCCLE), Chemistry Practical Achievement Test (CPAT) and the Chemistry Attitude Scale (CAS) were used for collection of data. The QCCLE was designed to assess students’ perceptions of their Chemistry laboratory learning environments. QCCLE consisted of 30 items measuring 5 different dimensions of Science laboratory environments (Student cohesiveness, Open-endedness, Integration, Rule-clarity and Material Environment) containing 6 items in each scale. The five response alternatives for each item were Strongly Agree, Agree, Undecided, Disagree and Strongly Disagree. The QCCLE was scored using a score range of one (1) for Strongly Disagreed to four (4) for Strongly Agreed for positive items and the scoring was reversed for negative items. CPAT was used to assess students’ performance in Chemistry laboratory activities. This consisted of a 5-option multiple choice of 25 items for which a table of specification was constructed to ensure content validity. The units of Chemistry covered include separation techniques, qualitative analysis and volumetric analysis. The scores of the students after the laboratory activities were taken as the performance in Chemistry. CAS was used to measure students’ attitudes toward the learning of Chemistry. This is a 20 item Likert-type of four options measuring 4 different scales of attitudes toward Chemistry (scientific inquiry, enjoyment of Chemistry lessons, leisure interest in science and career interest in Chemistry). This contained 5 items in each scale. The five response alternatives for each item were Strongly Agree, Agree, Undecided, Disagree and Strongly Disagree. The CAS was scored using a score range of one (1) for Strongly Disagree to four (4) for Strongly Agree for positive items and the scoring was reversed for negative items.

The instruments were given to experts in Chemistry education and test and measurement. Based on their comments, the instruments were corrected, restructured and hence refined in order to meet the face and content validity requirements. A trial test was carried out by administering the instruments on fifty (50) non-participating Senior Secondary School Three (SS III) students from one of the schools outside the local government area used for the study. The data obtained from trial testing was analysed using
Cronbach Alpha and a coefficient of internal consistency of 0.88, 0.91 and 0.69 were obtained for QCCLE, CPAT and CAS respectively.

Results
Hypothesis One
There is no significant relationship between five dimensions of the chemistry laboratory learning environment (material environment, integration, student cohesiveness, open-endedness and rule clarity) and students’ performance in Chemistry.

The analysis is as shown in table 1

Table 1: ANOVA Showing the Relationship Between the Five Dimensions of the Laboratory Learning Environment and Students’ Performance in Chemistry

<table>
<thead>
<tr>
<th>Model</th>
<th>Sum of Squares</th>
<th>Df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
<th>Decision at P&lt;.05</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regression</td>
<td>230980.8</td>
<td>5</td>
<td>46196.16</td>
<td>678.96</td>
<td>.000</td>
<td>*</td>
</tr>
<tr>
<td>Residual</td>
<td>46539.24</td>
<td>684</td>
<td>68.04</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>277520.00</td>
<td>689</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* = Significant at P<.05 alpha level

The result in Table 1 shows that the relationship between five dimensions of the laboratory learning environment and students’ performance in Chemistry was significant (F(4,684)=678.96, P=.000). Therefore, the null hypothesis stating a non-significant relationship between five dimensions of the laboratory learning environment and students’ performance in Chemistry was rejected. This implies that there is a significant relationship between five dimensions of the laboratory learning environment and students’ performance in Chemistry. The table also shows that the independent variable (five dimensions of the laboratory learning environment) accounted for 83.1% of the total variance in the performance of students in Chemistry.

To find out the relative contribution of each of the variables of the independent variable to the performance of students in Chemistry, multiple regression analysis was considered and the result is as shown in Table 2
Table 2: Relative contribution of learning environment variables to students’ performance in Chemistry.

<table>
<thead>
<tr>
<th>Learning Environment Variables</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>Rank</th>
<th>t</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B.</td>
<td>Std. Error</td>
<td>Beta</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Constant)</td>
<td>2.716</td>
<td>.995</td>
<td>-</td>
<td>2.730</td>
<td>.006*</td>
</tr>
<tr>
<td>Material Environment</td>
<td>.341</td>
<td>.036</td>
<td>.345</td>
<td>1st</td>
<td>9.378</td>
</tr>
<tr>
<td>Integration</td>
<td>.215</td>
<td>.034</td>
<td>.219</td>
<td>2nd</td>
<td>6.340</td>
</tr>
<tr>
<td>Students’ Cohesiveness</td>
<td>.171</td>
<td>.038</td>
<td>.173</td>
<td>3rd</td>
<td>4.548</td>
</tr>
<tr>
<td>Open-endedness</td>
<td>.095</td>
<td>.032</td>
<td>.097</td>
<td>5th</td>
<td>2.918</td>
</tr>
<tr>
<td>Rule-Clarity</td>
<td>.037</td>
<td>.037</td>
<td>.139</td>
<td>4th</td>
<td>3.690</td>
</tr>
</tbody>
</table>

* = Significant at P<.05 Alpha level

Table 2 shows that all the learning environment variables contributed significantly to the students’ performance in Chemistry (t (720)=2.73, P<.05). That is, material environment was significant (t (720)=9.38, P<.05), integration was significant (t (720)=6.34, P<.05), student cohesiveness was significant (t (720)=4.55, P<.05), open-endedness was significant (t (720)=2.92, P<.05) and also rule- clarity was significant (t (720)=3.69, P<.05). Table 3 also shows that material environment had the highest contribution to students’ performance in Chemistry (β=.345, 34.5%). This is seconded by integration (β =.219, 21.9%), followed by
student cohesiveness (β = .173, 17.3%), followed by rule-clarity (β = .139, 13.9%) while open-endedness (β = .097, 9.7%) had the lowest contribution.

**Hypothesis Two**

There is no significant relationship between five dimensions of the laboratory learning environment (material environment, integration, students’ cohesiveness, open-endedness and rule clarity and students attitude towards Chemistry.

The analysis is as shown in Table 3.

**Table 3: ANOVA Showing the relationship between five dimensions of the laboratory learning environment (material environment, integration, students cohesiveness, open-endedness and rule clarity and students attitude towards Chemistry.**

<table>
<thead>
<tr>
<th>Model</th>
<th>Sum of Squares</th>
<th>Df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
<th>Decision at P&lt;.05</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regression</td>
<td>80136.34&lt;sup&gt;a&lt;/sup&gt;</td>
<td>5</td>
<td>16087.27</td>
<td>563.28</td>
<td>.000</td>
<td>*</td>
</tr>
<tr>
<td>Residual</td>
<td>19534.31</td>
<td>684</td>
<td>28.56</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>99670.65</td>
<td>689</td>
<td>28.56</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* = Significant at P<.05 alpha level

<sup>a</sup> = Adjusted R. Square = .884

The result in Table 3 shows that the relationship between the five dimension of the laboratory learning environment and students’ attitude towards Chemistry was significant (F <sub>(4,684)</sub> =563.28, P=.000). Therefore, the null hypothesis stating a non-significant relationship between five dimensions of the laboratory learning environment and students’ attitude towards Chemistry was rejected. This implies that there is a significant relationship between five dimensions of the laboratory learning environment and students’ attitude towards Chemistry. The table also shows that the independent variable (five dimensions of the laboratory learning environment) accounted for 88.4% of the total variance in the attitude of students towards Chemistry.
To find out the relative contributions of each of the variables of the independent variable to the attitude of students towards Chemistry, multiple regression analysis was considered and the result is as shown in Table 4.

Table 4: Relative contribution of learning environment variables to students’ attitude towards Chemistry

<table>
<thead>
<tr>
<th>Learning Environment Variables</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>Rank</th>
<th>t</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B.</td>
<td>Std. Error</td>
<td>Beta</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Constant)</td>
<td>.411</td>
<td>.193</td>
<td>-</td>
<td>2.134</td>
<td>.033*</td>
</tr>
<tr>
<td>Material Environment</td>
<td>.642</td>
<td>.036</td>
<td>.645</td>
<td>1st</td>
<td>17.915</td>
</tr>
<tr>
<td>Integration</td>
<td>.263</td>
<td>.017</td>
<td>.267</td>
<td>2nd</td>
<td>15.738</td>
</tr>
<tr>
<td>Students’ Cohesiveness</td>
<td>.194</td>
<td>.039</td>
<td>.196</td>
<td>3rd</td>
<td>5.028</td>
</tr>
<tr>
<td>Open-endedness</td>
<td>.132</td>
<td>.013</td>
<td>.135</td>
<td>5th</td>
<td>10.257</td>
</tr>
<tr>
<td>Rule-Clarity</td>
<td>.151</td>
<td>.048</td>
<td>.153</td>
<td>4th</td>
<td>3.138</td>
</tr>
</tbody>
</table>

* = Significant at P<.05 Alpha level

Table 4 shows that all the learning environment variables contributed significantly to the students’ attitude towards Chemistry \((t_{(720)}=2.13, P=.033)\). That is, material environment was significant \((t_{(720)}=17.92, P=.000)\), integration was significant \((t_{(720)}=15.74, P=.000)\), student cohesiveness was significant \((t_{(720)}=5.03, P=.000)\), rule-clarity was significant \((t_{(720)}=3.138, P=.002)\) and also open-endedness was significant \((t_{(720)}=10.26, P=.000)\). Table 5
also shows that material environment had the highest contribution to students’ attitude towards Chemistry ($\beta = .645, 64.5\%$). This is seconded by integration ($\beta = .267, 26.7\%$), followed by student cohesiveness ($\beta = .196, 19.6\%$), followed by rule-clarity ($\beta = .153, 15.3\%$) while open-endedness ($\beta = .135, 13.5\%$) had the lowest contribution.

**Discussion of Findings**

The results of hypothesis $H_0 1$ showed that there was significant relationship between five dimensions of laboratory learning environment (material environment, integration, open-endedness) and students’ performance in Chemistry. The results also showed that the five dimensions of the Chemistry laboratory learning environment were positively correlated with students’ academic performance. These associations are positive for the scales of Material Environment, Integration, Student Cohesiveness, Open-endedness and rule clarity scales. This implies that in classes where the students perceived satisfactory material environment and greater integration, student cohesiveness, open-endedness and clear rules, there will be improvement in their performance. The findings of the study also revealed that student cohesiveness is the least favourably perceived dimensions of the Chemistry laboratory environment, followed by rule clarity, with integration being the most favourably perceived. This is in line with the finding of Henderson, Fisher and Fraser (1995) that integration of practical and theory components of course are aspect of the learning environment likely to promote favourable learning outcome.

The result further showed that students show relatively favourable perceptions of their Chemistry laboratory lessons, with the lowest score occurring for the open-endedness scale. It seems that experiments in Chemistry laboratory lessons are normally organized with clear procedures which the students must follow in carrying out laboratory activities. The lower score on open-endedness scale has been also reported in several previous studies (Gidding and Waldrip, 1996; Wong and Waldrip, 1996). The result was also in agreement with the findings of Aladejana and Aderibigbe (2007) that the five components of the science laboratory environment were positively correlated with students’ academic performance.

The analysis further showed that Chemistry students perceived greater integration between theory and practical. The integration of the Chemistry laboratory activities with the textual materials informed students that each investigation contained important chemical ideas that were directly related to the concepts being explained. The finding was supported
by Akpan (2012) that learning environment could have potential influence on students’ achievement. It is also observed from the findings of this study that students’ perception of Chemistry laboratory learning environment correlate positively with students’ performance considering the regression summary for students’ performance and Chemistry laboratory learning environment. This means that students’ perception is relevant towards the determination of performance in Chemistry.

The results of analysis of hypothesis $H_02$ showed that there was significant relationship between students’ perception of the Chemistry laboratory learning environment and students’ attitude towards Chemistry. It is observed from the findings of this study that the entire laboratory learning environment variables contributed significantly to the students’ attitude towards Chemistry. The results also indicated that material environment is the least favourably perceived dimensions of the Chemistry laboratory environment, followed by open-endedness with integration being the most favourably perceived. This means that material resources for the teaching and learning of Chemistry are inadequate. This is in support of Adeyemi (2008) that there was inadequate provision of science laboratories and equipment in many secondary schools in Ondo State, Nigeria. The findings showed that the five dimensions of the Chemistry laboratory learning environment had significant relationship with students’ attitude towards Chemistry. Students perceived open-endedness as being significantly less favourable than all other dimensions. This means that close-ended laboratory activities dominate much of Chemistry education in the secondary schools in Ondo State. This corroborates the results of Kalu (2004) which reported that close-ended laboratory activities dominate much of science education in the secondary schools in Calabar Municipality. This is also in line with previous related research in science laboratory learning environments in other countries (Toansakul, 2007; Henderson, Fisher and Fraser, 1995; Wong and Fraser, 1997) that positive association existed between the nature of Chemistry laboratory environment and students’ attitudinal outcome. The findings of the study also revealed that laboratory activities are apparently only those that aim at verifying relationships already discussed in the class, especially since integration is the most favourably perceived dimension by the students. The implication is that the teacher is only training the students on how to follow instructions and manipulate laboratory equipment. This is not good enough since science laboratory work is meant to develop in the learners the skills of inquiry in science which goes beyond mere skills in manipulation of apparatus.
Conclusion

The study concluded that there is significant relationship between five dimensions of laboratory learning environment (material environment, integration, student cohesiveness, open-endedness and rule clarity) and students’ academic performance. It was also revealed that there is significant relationship between the five dimensions of laboratory learning environment and students’ attitude towards Chemistry. All the five (5) QCCLE factors are directly related to student’s performance and attitude towards Chemistry. That is, the more favourable the laboratory environment is, the more positive are the performance and attitude towards Chemistry and vice-versa.

Recommendations

On the basis of the findings of this study, the following recommendations are made:

1. The significant relationship noted between the laboratory learning environment measures of material environment, integration, student cohesiveness, open-endedness and rule clarity and student attitude to Chemistry should be of interest to science educators. In order to encourage the development of scientific attitudes, teachers should make sure appropriate controls are established for these classroom environmental factors.

2. To enhance the teaching and learning of Chemistry, teachers and administrator should pay particular attention to the low score in the open-endedness and material environment dimensions of the laboratory learning environment. This indicates areas where improvement can be made in the teaching and learning of Chemistry.

3. As this study indicated that material environment was one of the least favourably perceived dimension of laboratory learning environment, it is recommended that the government should provide secondary schools with resources, teaching materials, models, equipment and adequate laboratories for the teaching and learning of Chemistry. The federal government could assist through the Education Trust Fund (ETF) in funding Science laboratories in schools.
4. Seminars, workshops and conferences should be organized occasionally for both the Chemistry teachers and their students and this will help the teachers refresh their knowledge, especially on modern strategies of teaching and for students to develop positive attitude to learning Chemistry. During training, importance of five dimensions of the laboratory learning environment should be highly emphasized.

REFERENCES


The Use Of Emotions To Enhance Students’ Interest Towards Science: The 4-Step Model of Discourse Analysis

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Abstract

How to enhance students’ interest in science topics is the main question authors want to explore in this paper. Using examples from TV science programs, videos and k-12 regular science classes, authors present the 4-step model of discourse analysis that can be used both to analyze the emotional content of discourse and to conceive a more interesting discourse in science classes.

Introduction

Emotion and its nature arouse the interest of philosophers, neuro-scientists, physiologists, psychologists and educators. Although the contribution to those different perspectives has enriched the discussion about emotions, we choose here to focus our approach on discourse. We are going to analyze emotion through the utterance perspective (Charaudeau, 2002) as emotion can be triggered through the appropriate use of words, sentences, expressions, and other non-verbal clues (Bossler, 2013).

Emotional clues, traces, hints, or markers are systematically embedded in TV science programs (as those analyzed in this paper), instructional videos (as the one shortly analyzed here) or science regular classes, with the goal to enhance interest on viewers, learners or students.

Discourse analysis
Charaudeau (2002) proposes that emotions are based on a subjective rationality, as the discursive subject has an intentionality when he speaks. Emotions are oriented towards an imaginary object, an object clipped from reality in order to become a real significant; and the relationship between that subject and the object occurs through the mediation of representations. The universe that circumscribe this subject consists of knowledge related to this person, his experiences and the values he assigned to them, which leads us to infer that emotions are linked to beliefs.

Promoting small shocks in the beliefs of the receiver (that is, the person who hears), while transiting its socio-discursive imagination, could raise the emotion evoked by the universe of beliefs. Other effects of pathemization are described as a combination of images and speech. In contemporary drama in its densest form (sensationalism) that combination is a common strategy when one seeks to attract and retain the audiences' attention and interest.

In our model we try to identify possible discursive emotional clues, hints, traces, or markers that could generate pathemic effects. Several authors (for instance Charauudeau, 2000, 2002) have tried to organize categories, in which we could recognize pathemic markers. We speak here about the speech beyond the rules of language use. In order to fully analyze discourse, we need to dive into the discursive mise-en-scène seeking to know what connects the speech circumstances (location, identities, relationships of intentionality and exchange physical conditions). These elements comprise a set of constraints from which the way of saying is more or less expected and meaning emerges as a result of the intrinsic relationship between the extra-discursive conditions and intra-discursive achievements. The communication subject (sender) makes choices about how to tell what shape its project of speech, according to the discursive constraints arising from situational constraints.

The presence or absence of linguistic signs is not sufficient to trigger emotion. Emotion on discourse is built upon utterance rather than linguistic markers, perceived through the fulfillment of this communication contract present in the socio-discursive imagination of the interlocutors.

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1 Pathos, feelings and emotions, as opposed to reason.
The 4-Step Model of Discourse Analysis

**Aim of the model**

Our discourse analysis model aims to show and demonstrate how teachers can prepare more interesting classes in science education. The model wants to answer the following question: how can teachers design more interesting classes in science education?

**The model**

That is the question we want to explore using the 4-step model of discourse analysis. In order to achieve it, we systematically observed TV science programs (a Brazilian one called, “Globo Ecologia” and a Portuguese one called “ABCiência” – Caldeira, 2012), as well as analyzed instructional videos (informal ones – “How to remove…” or “How to fix…” computer related videos and formal ones – mostly from Khan Academy) and regular k-12 science classes.

The main authors and concepts we dialogue here are Charaudeau (2002) and the concept of communication contract; Charaudeau (2000) and Bauer (2000) and the concept of pathos, the pathemization of discourse and pathemic markers (markers, traces, hints, and clues that might trigger interest in the audience). In addition to them, Bakhtin (1986; 1992) and the concepts of the discourse theme (identification of utterance islands) and meaning (the sender discourse’s intention or the meaning as extracted by the receiver).

The 4-step model of the discourse analysis starts with the promise that the presenter / teacher makes to his / her audience (the communication contract): “Today we’ll have the most frightening class of our lives!” – says the teacher at the opening of a class about sharks, and other dangerous sea animals. Although this communication contract is sustained or revised through the discourse and the interaction process, here we accentuate its impact in the beginning of the communication process.

When the presenter says at the beginning of an instructional video on the anatomy of a neuron that those type of cells is at the top five of an imaginary cells ranking (Khan Academy, 2012) the purpose is to trigger interest in learner, in order that he keeps watching the lesson. When the discourse is built around poetic images triggered by words (the planet Earth as a blue dot in space, for instance) the purpose is to introduce in potentially boring
speech elements that soften the words of scientific knowledge while triggering interest in the audience.

Next step deals with the emotion associated with words and sentences. In a program about climate change, the presenter uses at the beginning of the program words like “death”, “destruction” and “victim”, finishing with “We live in a great danger!”. Words and sentences like those ones are emotional clues or traces that the presenter gives to the audience about the program content. However, when he says: “Scientists forecast is that at the end of the century the sea water will become 1 degree Celsius warmer than today. But that is not a future-only problem. Changes have already started/.../” (pathemic marker), the aim is to induce an emotional state in order to keep the audience watching the program.

The third step of the model is the theme: “Earth is sick again. Has a fever. Our civilization has grown without care and warmed the planet quicker than ever. This time... we are the comet” – clearly the theme is “Climate Change” (explicit theme), but presenter poses the man as “the bad guy” (hidden theme)!

The final step (the discourse intention or discursive intention of the mise-en-scène) is what the audience extracts as the intention in the presenter / teacher discourse. The man as the bad guy has a communication intention – the climate change is the result of men’s actions and each one of us must adopt behaviors to reverse those results (for instance, “Act Locally, Think Globally”).

Model applications: Examples

Therefore, to build this model we focused on these four essential concepts: communication contract, pathemic clues, hints, traces and markers, theme and discourse intention.

1. Communication contract

To Charaudeau (1992), in the study of any act of language we have a dialectical meeting involving the production process (sender) and the receiving process (receiver) placed in the same discursive universe. According to Charaudeau (2000), every discourse
staging incorporates extra-linguistic features, to the extent that the meaning embodies the presumed, the said and the context in which the speech occurs. For the author, the discursive mise-en-scène features 3 levels: The situational level, the communication level and the discursive level.

The situational level is materialized in the exterior space of the speech act. At the situational level, we seek to circumscribe the situation of discursive production. Television has its own impositions, quite different from the classroom, even when we considered that the theme developed (science) is common to both.

Example (Globo Ecologia)

Although Globo Ecologia has a similar structure of a news program it is not. Its presenter is a well-known young actor. He dresses casually and he starts the program on the beach. He replenishes its speech with unusual expressions in news programs, as “yeah” and he invites the audience to participate in the discourse (“Did you think about it before?” or “Do you remember when we talked about…”). He speaks in a slowly and leisurely way, as if to make sure that the ideas will become clear and the words are properly pronounced. The concise, objective, and short, distinctive phrases typical of television news does not appear in this program. Rather, the transcript of the program looks like the text in a book, including fragments that are more similar to poetry, as in the following example:

Presenter: A blue dot on the Universe. Earth has several billion years and in this time suffered a lot of changes. It had five major extinctions. At the most famous, 65 million years ago, an asteroid extinguished the dinosaurs. Our planet always recovers, but it needs a lot of time in order to life come back in full strength. And biodiversity returns in a bunch of colors, shapes and sounds. Earth became sick again. Has a fever /.../

The communication contract states that the program is a serious one (as it deals with scientific information and knowledge), but with a little poetry (aiming to soften the potentially dull scientific information).
For the determination of the communication contract, it is of special interest the purpose or the language "acts-how". Charaudeau (1997) identifies four purposes of the informative speech: the "know-how", the "think-how", the "how-to-do" and the "how-to-make sense". The "know-how" searches the transmission of factual and phenomenal knowledge to the instance of reception. However, another purpose can arise: the "understand-how" purpose (Bossler, 2004). It is not enough to know-how, sometimes there is a concern and a commitment of the communicating subject to explain, so that his interlocutor understands what he/she is presenting.

2. Pathemic clues and markers

Words like “explosion”, “boil”, “burned” and “severity” can exert a pathemic effect. The pathemic marker we identified was “risk of pain”. Pain as result of an accident is suggested and serves as a premise to the discourse organization, as we can observe in the following example.

Example (ABCiência)

Presenter: A water explosion. And boiling water for it matters... If I had grabbed the glass with my hand I could have burned myself with severity.

But words as “warning” and “danger” have another pathemic effect. Those words are pathemic clues or traces associated with the pathemic marker “danger alert”. A danger warning is announced. A routine behavior can represent a huge risk. The following example gives us several clues of how that idea is built:

Example (ABCiência)

1. C: Manuel, what are we going to see now, another experiment?
2. M: It’s not an experiment. It’s a warning, Carlota, a danger warning.
3. C: Danger?
4. M: Exactly
5. C: And what is the danger?
6. M: Look, something a lot of people do at home and don’t know how dangerous it is: Boiling water in the microwave.
7. C: Ok. Explain how that can be dangerous.

3. The theme

According to Bakhtin (1986, 1992) the theme can be analyzed in two levels: the utterance level (there is, the meaning of sentences – a low-level theme) and the general topic of the speech (the factual content of the speech – a high-level theme – Baktin, 1986).

The utterance as understood by Bakhtin (1986) has its full meaning perceived as the low-level theme. For the author, at this level the theme consists of a system of signs that seeks to adjust to the conditions of a given discursive moment. To carry out the theme, the meaning appears as a technical apparatus. There is no mechanical boundary between the meaning and the theme and there is no theme without meaning, and vice versa. It would be impossible, for example, to have the meaning of an isolated word, as when we learn a foreign language, without taking the meaning as the substance of a theme, there is, without constructing an utterance, an example (Bakhtin, 1986).

Bakhtin believes that beyond the theme, more precisely inside the theme, the utterance is equally gifted of a meaning. For the author (1986, p. 27), the "meaning is not in the word neither in the soul of the speaker, nor as well in the soul of the interlocutor. It is the interaction effect of the speaker and the receiver produced by the material of a particular sound complex". The stream of verbal communication provides the word with the light of its meaning. When we locate the enunciation and recognize the meaning we would be closed to identify possible emotional hints, clues or markers.

In the process of understanding, each significant isolable element of an utterance, and the full utterance, are transferred from our minds to another active and responsive context. For Bakhtin (1986), understanding would be a form of dialogue, standing for the enunciation
as a reply to another reply in the dialogue. Understanding is a process in which the speaker's word is opposed by a counter word. In the words of the author:

“Understanding the utterance of another (person) means to orient yourself towards that utterance, to find its proper place in the corresponding context. To each word of the utterance that we are in process of understanding, we match a number of our words, forming a reply. The more numerous and substantial our words are, deeper and real is our understanding.” (Bakhtin, 1986, p.32). Therefore, when preparing a draft speech, the communicating person could bet on possible effects, the intended effects, placing pathemic markers along the discursive path so that the interlocutor reach such effects as he / she is finding and recognizing them. However, it is a lottery, a gamble, since the presence of the markers does not mean that emotion will be triggered in the interpreting subject (receiver) as expected. There is an intention without warranty of achieving the intended effect.

We can expect, for example, that talking about the death of a person may have distinct pathemic effects if the listener is a family member or friend of the deceased or if it is a stranger. But commotion can also be reached if the listener integrates' a humanitarian group, to which the feeling of compassion is real. On the other hand, a relative could show himself devoid of any feeling about the death, if the affective bonds between the subjects had long ago been broken. In this sense the discourse may carry markers of emotion, but these markers only will be configured as triggers of emotion after they are submitted to the interpretive filter of the interpreting subject (receiver).

It is possible that even speech productions devoid of intention to thrill, can cause emotion on reception if the subjects meet in the discourse elements with a pathemic effect for them. It is common, for example, stage actors declare with astonishment that the audience sometimes shows’ different reactions as those intended and expected. They laugh when they should cry, they cry when they should laugh or remain unmoved by scenes of great dramatic intensity.

The communicating person can consciously maneuver the speech in order to add emotion inducers.; however, there is no way to guarantee the authenticity of what is declared at the production instance. In this case the speech is carrying an emotion inducer, but is unable to trigger it for lacking of authenticity, and is therefore questionable. Somehow the interpreting subject (receiver) finds illegitimate what is declared and does not sympathize
with such a move, possibly identifying in the speech signs of non-truth. As the saying states, "you can play the victim, but you do not impress me."

Therefore the theme of an utterance (its real meaning) is depicted in the interplay of words and sentences used by the sender in its communication process and the mind (including emotions) of the receiver (the audience).

At school teachers utterances are usually connected to school content (a factual content – for instance, Geography, Sciences, Chemistry or Biology), and sometimes are depleted of emotions. But at TV this is not the case. The high-level theme of the Globo Ecologia communication contract example is “Global Warming’ (or “Climate Change”), and the high-level theme of the ABCiência example is dangerous behaviors in our daily life. However both programs have very different implicit themes at the utterance level (the pathemic traces, hints, clues, or markers presenters put in their speech). Globo Ecologia utterance theme is the man as a planet predator and the need that Humanity change its behavior in order to preserve our planet (“life at risk” as emotional marker). ABCiência utterance theme is that science is not a difficult subject and that it can be found in everyday things (“danger alert” as emotional marker).

Most school subjects also have an explicit and factual theme (directly connected to school content – for instance, a Chemistry, Physics, or Biology particular content), but also have a hidden theme: for instance, science and technology as social endeavors or citizenship.

4. Discourse intention

The final step (the discourse intention) is what the audience extracts as the intention of the discourse. The man as a major actor on Global Warming has an intention – the climate change are result of men’s actions and each one of us must adopt new behaviors to reverse those changes, for instance.

To Charaudeau (1992, 2000, 2002), the presence of linguistic signs that denote emotion in speech would not necessarily result in the materialization of emotion in the discursive mise-en-scène, it can just have an intended effect. Put another way, the presence of words belonging, at first glance, to the semantic field of emotion as "scary" or "fantastic" just suggests the intention to thrill the reception in the project of the sender’s speech. Thus,
The lexical indicators of emotion are pathemic traces from which we are led to investigate in the sound scene possible utterances of emotion.

The meaning given by the subjects to enunciation would confirm that a particular pathemic trace would develop and turn to a pathemic marker. Bakhtin (1986, 1992) identifies the utterance as "an emerging island" of speech and this island has its contours which are dependent on the situation of enunciation and of the audience. For the author, the utterance is endowed with a significance that is neither glued to the word nor to the soul of the speaker or the listener / interlocutor. The significance arises as a product of the speaker and the receiver interaction.

From these pathemic traces we can investigate the island of enunciation in which they are inserted, and then we can verify the meaning intended by enunciators. Working with these islands of enunciation and their meanings, we arrive to the following communication contract, pathemic markers, theme and intention of the discursive mise-en-scène (table 1)

<table>
<thead>
<tr>
<th>Steps</th>
<th>Globo Ecologia</th>
<th>ABCiência</th>
</tr>
</thead>
<tbody>
<tr>
<td>Communication contract</td>
<td>1. The program is committed to addressing issues related to the environment.</td>
<td>1. The program has Science as the main topic.</td>
</tr>
<tr>
<td></td>
<td>2. The program will treat the information lightly, without leaving aside the</td>
<td>2. Scientific knowledge is limited to basic levels.</td>
</tr>
<tr>
<td></td>
<td>scientific rigor and seriousness.</td>
<td>3. Scientific knowledge is accessed through practical experiments.</td>
</tr>
<tr>
<td></td>
<td>3. The program is committed to seek information in the most prestigious</td>
<td>4. There may be a practical use for the knowledge available.</td>
</tr>
<tr>
<td></td>
<td>scientific sources.</td>
<td></td>
</tr>
<tr>
<td>Pathemic markers</td>
<td>Change management</td>
<td>Risk of pain</td>
</tr>
<tr>
<td></td>
<td>Risk of death</td>
<td>Danger alert</td>
</tr>
<tr>
<td>Theme</td>
<td>Global Warming</td>
<td>Ebulition</td>
</tr>
</tbody>
</table>
How to apply the model in Science Education

To better isolate the different four steps in a discourse, we start to transcribe *ipsis verbis* the words used in the communication process (i.e. discourse) and then we build a narrative table for each discourse (each program, instructional video or class analyzed – see examples of the presenters of Globo Ecologia and ABCiência, as the utterances transcribed can be put in a table – using the 4-step model table analysis (table 1). Naturally same discourse parts can and should be analyzed in two or more different model steps, as we can see in the following excerpts.

The teacher has teased her (blind) students saying: “Next class I’ll make it rain inside the classroom” – the class theme approached changes of water physical states. And each time she crossed with her students at school she said: “Don’t forget the rain inside the classroom next week!” Students were so interested to experience the rain inside the classroom that they arrived earlier in the classroom in the following week!

The opening sounds and images of TV science programs have the same purpose: to establish a communication contract with the audience with the promise that something special will happen in the following program. On contrary, most of the instructional video material analyzed starts the presentation with: “Today’s video is about...” without a promise of something different to the audience, establishing a flat communication contract (the audience knows that it will be a class as usual as the previous ones).
Teachers must be aware that they have an implicit communication contract with their students. That implicit contract is built at their first interactions with them, it is reinforced through the subsequent interactions and it is difficult to be suddenly changed. Nevertheless if they want (or need) to change it they must follow the rule: keep your promises!

When TV science programs presenters (“Globo Ecologia”) or teachers use words like “fantastic”, “innocence”, “kiss”, “death”, “victim”, “destruction” or “danger” (“ABCiência”) when explaining a science topic their intention is to draw the audience’s / students’ attention to the theme. Using strong pathemic words and / or sentences (as “A coral is where biodiversity is greater at (hesitation) sea environments... coral reduction or coral death also results on the death of all organisms that are coral dependents. Both invertebrates and fishes around corals as well as sea life around the corals will be damaged”) has a goal: to elicit strong emotional responses, increasing the audience’s (viewers or students) interest in the presentation / class (and usually presenters and teachers believe that interest has a strong correlation with learning).

To an effective use of the 4-step model in the classroom, teachers need to start the lesson preparation at its last step (discourse intention or intention of the discursive mise-en-scène), as the discourse intention should mold the communication contract, the choice and use of pathemic clues, hints, traces and markers (but always bearing in mind the explicit and or implicit themes of the speech). Teachers must answer the following questions if they want to have more interesting lessons: “What is my discursive intention?”, “How can I implement my discursive intention?”, “What type of communication contract do I want to establish with my students?”, “How can I establish that contract?” and “What type of emotions can I use in the classroom to enhance my students’ interest in the lesson?”.

References


Title: Predictors of Improvement in Critical Thinking Skills Among Nursing Students in an Online Graduate Nursing Research Course

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Predictors of Improvement in Critical Thinking Skills Among Nursing Students in an Online Graduate Nursing Research Course

Abstract

The objective of this study was to examine predictors of improvement in critical thinking skills among nursing students in an online graduate nursing research course. A total of 35 students who had taken an online nursing research course within the prior 12 months and who were currently enrolled in the online graduate nursing program were sent a link to complete a survey via “survey monkey.” Time spent in graduate school, course satisfaction, and whether or not a student felt supported were all predictive of improved critical thinking skills. Connectedness remained to be the highest predictor of how much students felt their critical thinking skills improved.

Background

The College of Nursing and Health Professions at Drexel University had an enrollment increase of 273% between the years of 2005-2013. This statistic matches Allen and Seaman’s report that online education is growing exponentially and has become mainstream. While online nursing programs seem to be on the rise, there still is variability in delivery of the content in those programs to enhance learning (Buckley, 2003; Dellinger & Wells, 2011). Even further, questions have arisen as to what behaviors determine the quality of learning and instruction in distance education programs (Bata-Jones & Avery, 2004; Barakzai & Fraser, 2005; Dellinger & Wells, 2011; Moore & Hart, 2004). The issue of connectedness in the online learning environment has become increasingly important to examine and has been shown to be one of the biggest predictors of student satisfaction with the online course (Arbaugh & Benbunan-Fich, 2007; Chung-Do, Filibeck, K., Goebert, G., Arakawa, G., Fraser, D., Laboy, J., & Minikawi, D., 2013; Mahoney, 2006; Swan, 2002). Connectedness has been shown to consist of the concepts of trust, respect, and mutuality within the online environment (Chung-Do, Filibeck, K., Goebert, G., Arakawa, G., Fraser, D., Laboy, J., & Minikawi, D., 2013). These concepts of trust, respect, and mutuality impact both the faculty- to- student interaction and also the student- to student- interactions within the classroom setting.

Some pedagogical issues in online graduate nursing research courses have been examined (Abdel-Maksoud, 2007; Balakis & Sparks, 2010; Poe-Greskamp, 2010; Rust, 2006; Sherry, Fulford & Zhang, 2009; Sowan & Jenkins, 2013). One study examining the effect of the type of learning environment on perceived learning among graduate nursing students who were enrolled in a nursing research course found when comparing different types of learning environments- internet only with other types of learning environments- that the quality of instruction is more of an influence on learning then the type of teaching modality (Dellinger & Wells, 2011).
Still, very few studies have looked at which qualities influence instruction—such as those within the concept of connectedness—and those which influence outcomes of student learning—such as critical thinking in an online graduate nursing research course (Dellinger & Wells, 2011; Hunter, Pitt, Croce, & Roche, 2014). One meta-analysis study found problem-based learning improved critical thinking skills in nursing students (Kong, Qin, Zhou, Mou & Gao, 2013).

Critical thinking has been one educational outcome to learning in all Nursing programs and has been found to be paramount (Hunter, Pitt, Croce & Roche, 2014; Kong, Qin, Zhou, Mou & Gao, 2013). Nurses need to make critical judgments about many patient care issues. There also is agreement by credentialing bodies that universities need to initiate learning experiences to improve critical thinking skills (American Association of Colleges of Nursing, 2008). Yet, few studies have examined this aspect among graduate nursing students in an online graduate nursing research course.

Given the paucity of studies specifically examining critical thinking skills in an online graduate nursing research and those factors which might promote or help to improve this outcome, this study was developed in order to evaluate predictors of improvement in critical thinking skills among nursing students in an online graduate nursing research course at Drexel University.

**Objective**

The objective of this study was to examine predictors of improvement in critical thinking skills among nursing students in an online graduate nursing research course.

**Method**

A total of 35 students who had taken an online nursing research course within the prior 12 months and who were currently enrolled in the online graduate nursing program were selected by a designated individual at the University and sent an email with a link to complete and return the survey to “survey monkey” (an online depository). Human subjects consent was obtained.

The respondents were mostly female, Caucasian, married, and working full time. The average age of the respondents was 41 years old. They had a high aptitude for computer skills, most were working for 10 years or less and had been in grad school for 6 months to 1 year. They reported caring for dependents less than 5 hours per day and had received a grade of A in the class. Thus the sample was highly homogenous.

The data collection tool was developed for the study and consisted of four types of questions: a. Demographic data questions; b. A researcher-generated, open-ended survey asking as an example: “What classroom behaviors students liked the most”; “What classroom behaviors students could have done to make the course better and what could faculty have done to make the course better”; c. Closed ended questions asking such questions as: “How would you rate your computer skills on a scale from 1-10”; “Whether students worked full time”, “If they cared for a dependent and whom”; “Perceptions of faculty satisfaction and their satisfaction”, and “Letter grade they received in the course” d. A Classroom community scale
developed by Rovai (2002). This scale is a Likert scale with 20 items using two subscales- a. connectedness (i.e., “I feel that students in the course care about each other”) and b. learning (i.e., “I feel I am encouraged to ask questions”). This scale was highly reliable in this study.

Data were analyzed using SAS 9.2. The outcome variable was critical thinking skills. This variable was dichotomized as either “yes” or “no” regarding critical thinking improvement. Descriptive analysis was performed along with univariate analysis using simple logistic regression to explore the relationship between critical thinking skills and the various predictors, Multivariate analysis was performed to obtain adjusted estimates of the relationship between critical thinking skill improvement and the various predictors using multivariate logistic regression.

Results

When considering an improvement in critical thinking skills, time spent in graduate school (approximately *12.5 times more likely with a p value of .005) and course satisfaction were all significant predictors of improvement in critical thinking skills (approximately 11.5 times more likely with a p value of .001). Higher connectedness was associated with an improvement in critical thinking (approximately 11.5 times more likely with a p value of .001). Specific items most predictive of connectedness were: “confident others will support me, feel connected to others, feel like this course is a family, trust others and feel students in this course care about each other”. Males were more likely to report a high degree of connectedness.

Higher amounts of learning were associated with an improvement in critical thinking (approximately 1.3 times more likely with a p value of .01). Specific items most predictive were: “felt there was an ample opportunity to learn, felt as if the course did promote a desire to learn, felt educational needs were being met, received timely feedback.” Students with positive course satisfaction and positive perceived faculty course satisfaction were more likely to exhibit a high degree of learning. The relationship between an improvement in critical thinking skills and connectedness in the classroom remained the same even after controlling for demographic variables. A similar relationship was detected when examining critical thinking and learning after controlling for the demographic variables.

After adjusting for gender and the amount of time spent in graduate school, the only explanatory variable of perceiving an improvement in critical thinking skills was the connectedness variable (1.3 times more likely with a p value of 0.02.).

Discussion

This pilot study verified prior work that years of study predicted higher levels of critical thinking skills among nursing students ([Hunter, Pitt, Croce, & Roche, 2014]). Nursing associated experience was also predictive of higher levels of critical thinking skills in prior studies as well ([Hunter, Pitt, Croce, & Roche, 2014]). While the current study did find that males reported a higher level of connectedness in the classroom, prior studies found age and gender did not
predict critical thinking skills. This study found the biggest predictor of critical thinking skills to be connectedness in the classroom.

Conclusions

Faculty in an online classroom should be concerned about these predictors in order to enhance critical thinking skills among graduate students. They may consider structuring their online course to enhance student perceptions of their feelings of connectedness in the classroom environment. Since this was a pilot study, future studies might examine critical thinking using a larger sample size with more objective measures of critical thinking.

*These odds-ratios may not be precise estimates due to the small sample size.

References


Glocalization: Customizing Hawaii Kine Educational Exchanges for Rural Japan

The Big Island of Hawaii offers a myriad of educational opportunities beyond the obvious tourist attractions. Nevertheless, due to existing stereotypes of Hawaii, sharing these possibilities with potential students, scholars, businesspeople and government officials from rural Japan has become an issue of packaging. This work introduces various proposals and presentations designed to assure Hirosaki University administrators and prefectural government officials in Aomori Prefecture that there is indeed profound pedagogical value to educational exchanges with Hawaii Island.

Aomori-ken is one of the foremost agricultural prefectures in Japan. In addition to thriving apple production, there are strong fishing communities and leading aquaculture businesses that harvest scallops. The Agriculture and Life Sciences Department at Hirosaki University has developed kurenainoyume (http://nature.cc.hirosaki-u.ac.jp/kurenainoyume/english.html), a unique apple hybrid that is red on the inside, as well as the outside. The department also produces a number of value-added agricultural products, including its own brand of sake. In addition, the Science and Technology Department is involved with emerging alternative energy projects and there is an Earthquake and Volcano Observatory.

On the other side of the Pacific, the Big Island has tremendous and diverse bragging rights, as well. One can experience 11 of the 13 world climate zones, for example. Surprisingly, there are more than 100 varieties of avocados from which to choose, certainly more than are found elsewhere. From the ocean floor to the peak, Mauna Kea is the tallest mountain on the planet, and Mauna Loa has the largest land mass of any mountain, along with the world’s largest volcano. Astronomers gather from the four corners of the Earth to study the cosmos from atop Mauna Kea, where they may find themselves trudging through snow from November to March. Volcanoes National Park, to quote the experts, is world-renowned both for “its active volcanic activity in the mid-Pacific Ocean, and for its broad variation of eco-systems from mountain top to sea level.”

More so than any other island in the group, Hawaii Island retains many vestiges of ancient Hawaiian life, where the neighborhoods were divided into abu-pua’a (pig altars), essentially pie-shaped wedges of land where those from the pointy tip in the mountain area provided the fruit of the land in exchange for fish from the broad base that touched
the seashore. The *ahu-pua`a* are numerically assigned now and *ahu-pua`a 82*, Captain Cook, is home to dozens of coffee farms, a historic Japanese-style hotel, shopping and more. One of the study proposals for the university includes bringing large groups of Agriculture majors to Captain Cook and letting them work and study at the local coffee farms while attending lectures on agribusinesses, soil management, etc.

Hawaii Island is on the cutting edge of energy experimentation and fish farming, as well. NELHA, the Natural Energy Laboratory of Hawaii Authority is an ocean and science park that houses a variety of sustainable industries and research organizations. While much of the shrimp consumed by Northern Hemisphere Pacific Rim nations may be imported from Southeast Asia, it is a little known fact that many of those prolific shrimp farms began with brood stock from the clean Kona waters. Another study proposal includes mini internships for students at NELHA and other local businesses, organizations and agencies.

Hirosaki is known for its snow, while sea level on the Big Island is quite balmy, but it is interesting to note that the very character of the students is quite similar. Local students attending University of Hawaii Hilo have often lived quite sheltered existences. Many of them have never traveled outside the State. The local students at Hirosaki University are in the same situation. At both institutions it has been students that come from outside of the area that gravitate toward the foreign exchange programs. Another goal of these study plans is to focus on the concept of “small town to small town,” in order to engage the locals at both ends and encourage them to step up and go abroad. Making the exchange seem comfortable is a major key to the glocalization of the experience. The idea is to emphasize the small town appeal of the Big Island, as some of the rural students, local government officials and university office staff would rather be in a small town than a big city.

For all of these reasons, the Big Island and Hirosaki are well-suited partners. The mission is to get over the preconceived notion that “Hawaii = Waikiki.” Hawaii was first known to the outside world when Captain Cook landed on the west side of the Big Island, these projects focus on having history repeat itself.

**Target Project Type 1**

**Student Study Tours**
In this three-week format, students would be offered intensive English lessons and be exposed to some of the following local activities: coffee farming, value-added farm-to-table products, fish farming, marine biology products, new energy sources, etc. Evenings would include some special group lectures on agriculture, technology and education, as well as time with homestay/farmstay families. Students would enjoy weekend activities such as ocean sports, hiking, fluming, Kilauea, Mauna Kea, etc. Students would get academic credit and have language and cross-cultural classes prior to departure.

Challenge from the administration: The director’s main concern was that this program would create a bigger burden on the office staff

Possible remedy: Create a special class in the university’s English language center (EL) specifically designed to teaching students how to apply for passports and visas. Answer all of the FAQs of studying abroad for students before they actually apply to a program. This would have a spillover effect on already established exchange programs, as well.

Target Project Type 2

**Internships**

Students would be given a chance to have a brief work experience at a local business. NELHA, the Natural Energy Laboratory of Hawaii Authority, would be a prime source for potential internships. A U.S. intern at one research facility in the past year created a ballast device for use in fish farming, which the organization has adopted for full-time use, so there is already a positive attitude toward interns at NELHA.

Target Project Type 3

**Department Specific Trips**

The Agriculture and Bio Science Department has expressed an interest in taking an entire class of undergraduates in their department, some two hundred people, on an international trip. Plans have been designed to center the students at an old Japanese-American hotel in the Captain Cook area where they would have access to farmers and University of Hawaii Community College resources. There may also be a possibility of tie-ups with a senior citizen center in the area, giving the students a chance to practice English while giving of their time to the local community. Another proposal is to have pharmacy students from UH Hilo visit on an internship and work with 4th year Hirosaki University medical students on pharmacology.
Target Project Type 4:

**Study Tours for Government Employees**

Similar in design to Project 1, this would be customized to the needs and tastes of the government workers. For prefectural office staff, time with staff of the mayor of Hawaii County’s office and officials from community outreach programs such as the Hawaii Department of Education’s Community Children’s Councils would be arranged.

**Project to-do List**

1. Create a series of surveys to gauge and rework the stereotypes of Hawaii.
2. Begin a class that teaches overseas trip preparation
3. Submit additional projects directly to the Agriculture and Medical Departments.
4. Reassess the university’s present position on overseas exchanges and strategize to suit the current climate.
From Conceptualization to Reflection: Ensuring Robust Clinical Experiences While Meeting the Professional Standards for Elementary Special Education Teachers

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Abstract

A major challenge for teacher candidates is meeting the demands of the clinical practice experience which assesses how they make connections between their theoretical knowledge base and the real classroom experience. The critical integration of knowledge of and pedagogy in academic subjects, the use of research-based, scientifically proven strategies and assessment practices, and the understanding of the culturally and linguistically diverse learning needs of students at various developmental levels based on specialty professional standards form the basis for successful teaching and learning. It is this foundation that aids teachers in meeting the multiple teacher licensure requirements across States. Guiding teacher candidates in thinking about, planning, implementing and reflecting on these elements require a systematic approach to clinical practice. This Conceptualization to Reflection Model provides a unique approach for clinical supervisors and cooperating teachers to preparing professional teachers to meet the rigors of the teaching profession. It also serves as a guide for teacher candidates to help them navigate the journey from student to practitioner. Since each teacher preparation program serves a distinct student population, this comprehensive model is presented for one specific degree program: Childhood Special Education (Dual Certificate – Grades 1-6), but can be easily adapted to meet the diverse needs and developmental levels of other student populations.
Introduction

With the passage of No Child Left Behind and the Reauthorization of the Individuals with Disabilities Education Improvement Act, the need for “highly qualified teachers” became a front burner issue for teacher preparation programs. Not only are colleges and universities expected to produce teachers to fit the mold of “highly qualified,” but they are also required to demonstrate that their education degree programs include extensive practical experiences for teacher candidates (NCATE, 2008, CAEP, 2013). Teacher candidates must acquire and demonstrate that they have the professional knowledge, skills, and dispositions to interact successfully with diverse learning communities. For candidates pursuing special education as a career path, the Council for Exceptional Children requires that “all special educators are well-prepared, career-oriented professionals with the conditions that allow them to provide individuals with exceptional needs the most effective interventions and that encourage entering special educators to become career-oriented special education professionals” (CEC, 2002, Gersten, Keating, Yovanoff, & Harniss, 2001; Darling-Hammond and Baratz-Snowden, 2005).

Clinical practice experiences, the supervised internship in teacher preparation programs must be “carefully administered, sequenced, and supervised in all areas of the elementary curriculum” and should provide candidates with experiences in a variety of diverse settings. Candidates should also have a broad knowledge base, be adept at creatively using appropriate materials and resources, including technology, and should be able to collaborate effectively with other professionals in the field in order to enhance student learning (ACEI, 2002, 2007).

This clinical practice model for childhood special education teacher candidates is one that is rigorous in many ways. First, it ensures that candidates acquire in-depth knowledge of all the critical academic content areas: English Language Arts, Mathematics, Science, Social Studies,
the Arts, Health Education and Physical Education to teach students at the elementary school grade levels. To teach all students, teachers need to “understand subject matter deeply and flexibly so they can help students create useful cognitive maps, relate one idea to another, and address misconceptions. Teachers need to see how ideas connect across fields and to everyday life. This kind of understanding provides a foundation for pedagogical content knowledge that enables teachers to make ideas accessible to others” (Shulman, 1987).

Second, it ensures that all teacher candidates acquire knowledge and skills in special education to meet the needs of diverse and exceptional learners at the elementary level. “Teaching in ways that connect with students also requires an understanding of differences that may arise from culture, family experiences, developed intelligences, and approaches to learning” (Grimmet & MacKinnon, 1992). To help all students learn, childhood special education teacher candidates need to think about what it means to learn different kinds of material for different purposes and how to decide which kinds of learning are most appropriate in different contexts. Teachers must be able to identify the strengths and weaknesses of different learners and must have the knowledge to work with students who have specific learning disabilities or needs (Shulman, 1992).

A third area of rigor involves a series of early field experiences that precede the clinical practice experience to ensure that candidates know how to collaborate with school partners, design and implement multiple learning and assessment tools, including the use of instructional and assistive technology, and engage in action research and supervised practice with individual and small groups of learners in diverse settings. “Teacher candidates get a more coherent learning experience when they are organized in teams with experienced teachers and college faculty. Experienced teachers deepen their knowledge by serving as mentors and teacher
leaders. The early field experiences in partner schools help to create the synergy between theory and practice, while creating the move from the pre-professional to the professional role for candidates as they construct knowledge that is more useful for both practice and ongoing theory building” (Darling-Hammond, 1994).

Fourth, the model includes collaborative and interdisciplinary seminars and intercession workshops to enhance candidates’ content, pedagogical and professional knowledge, skills and dispositions. Acquiring this sophisticated knowledge and developing a practice that is different from what candidates themselves experienced as students requires learning opportunities for teacher candidates that are more powerful than simply reading and talking about new pedagogical ideas (Ball & Cohen, 1996). Teachers learn best by studying, by doing and reflecting, by collaborating with other teachers, by looking closely at students and their work, and by sharing what they see. The interdisciplinary seminars provide this professional development experience for pre-service teacher candidates.

The implementation of the New York State Common Core Curriculum and the need to include students with disabilities in schools’ assessment and accountability measures require teachers to have knowledge of and ability to teach subject matter (NYCDOE, Raising the Bar for All Students, NY City’s Special Education Reform, 2012). In this model, teacher candidates are prepared to teach all four foundational areas: ELA, math, science and social studies that incorporate the Arts, health and physical education components, and are prepared to address all these key areas to support students with both high and low-incidence disabilities in learning across these curricula areas. Candidates acquire a broad scope of interdisciplinary knowledge (12 credits) across academic content areas, then choose a subject area concentration (27-30 credits), and pass the teaching methods courses (pedagogy) in each subject area.
Content area and specialty workshops for special education pre-service teachers are continuously implemented at Medgar Evers College, and are supported by OSEP funding for personnel preparation since 2007. These extension professional development workshops continue to improve the content knowledge and pedagogical and professional skills of teacher candidates in the academic and non-academic subject areas. Special education collaboration in content area workshops have focused on academics for elementary special education, including lesson planning, adaptation, differentiated instruction, use of assistive and other technological devices, and current research-based practices in teaching and learning, such as Response to Intervention (RTI), Positive Behavioral Intervention and Support, (PBIS), comprehensive assessment practices, and culturally responsive teaching, among others.

The extended workshop curricula are implemented in collaboration with local service providers and district school partners. The curricula include the developmental learning goals identified by the Council for Exceptional Children (CEC) and the Common Core Learning Standards. They are also closely aligned with the Association for Childhood Education International (ACEI) Standards and incorporate the newest ed-TPA framework. These additional workshops, held during the winter and summer intercessions, are non-credit bearing and voluntary and engage candidates prior to, during, and after their clinical practice experience in a relaxed and collaborative mentoring atmosphere.

The need for teachers with subject-matter knowledge, content specialty skills, and enhanced pre-service clinical experiences prompted the development of this model. It responds to the critical need for “highly qualified” teachers to serve students in urban areas that are often characterized by their social and cultural differences. Reports on teacher quality revealed that “students in high-poverty, high minority, and low-performing schools are less likely than other
pupils to be taught by teachers trained in their subjects” (Ansell & McCabe, 2003). They reported that in high-poverty schools, there were 32% of students who were taught by core teachers without “at least a minor in the subject,” compared to 18% in low-poverty schools. Data on whether in-service teachers majored or even minored in core subjects they taught were reported in the US Department of Education Schools and Staffing Survey (1999-2000). The results concluded that students in high poverty and high minority schools “get the short end of the stick” (Ansell & McCabe, 2003).

The need for added preparation in content areas is reflected in the results of the national assessments each year. For students with disabilities, the chances of achieving proficiency in these content areas are even more daunting. Confounding the problem is the fact that most of the schools under review for failure to meet content standards are those schools identified as “high-need” – comprised of minority overrepresented groups of students – students with language differences and other socioeconomic disadvantages. The correlation between cultural competency and content knowledge and skills is evident. Medgar Evers College has addressed these issues in its teacher preparation programs and continually evaluates candidates’ ability to develop and teach developmentally appropriate, culturally and linguistically responsive lessons to students with disabilities in urban schools.

The pinnacle of this preparation is the Clinical Practice experience, which emphasizes the integration of theoretical constructs, acquired knowledge, skills and dispositions into carefully structured supervised experiences that develop the proficiencies required for “highly qualified” teachers. This process provides opportunities for pre-service childhood special education teacher candidates to engage in preparing and delivering content-rich and standards-based academic instruction for diverse learners in inclusive and special education settings. To achieve this goal,
candidates engage in a process that starts with conceptualization and ends with reflection to demonstrate what they know, understand, and can teach.

Precursor to the Clinical Experience: Early Field Experiences

Early field experiences provide learning opportunities for candidates to demonstrate increasing involvement in designing, delivering and evaluating instruction prior to their clinical practice experiences. Early field experiences begin with observations of learning professionals and environments, progress to immersion with individual and small groups of learners using and assessing instructional and behavioral interventions and end with active engagement in teaching and learning activities, including interactions with parents, students, teachers and the broader learning community. Early field and clinical experiences and related assessments support candidates’ development of themselves as learners and an understanding of the professional field, and their roles as teachers within the field. Field experiences are attached to specific and related courses to contextualize the learning experiences for candidates. These experiences include opportunities to shadow professionals, observation in education, parents and communities as school partners, technology in the classroom, working with individual learners, working with small groups of learners, curriculum research and design and assessment in education.

Length of Clinical Experience and Settings

As candidates progress from early field to clinical practice, they begin to embrace and articulate the standards of their professional areas. The Clinical Practice experience is extensive
and intensive and ensures that candidates have a range of diverse experiences where they can
demonstrate the knowledge, skills and dispositions requisite for the specialty field. Childhood
Special Education candidates must have a sound foundation of general education knowledge and
skills and demonstrate proficiencies in special education knowledge, skills and dispositions so
that they can effectively teach all children. To accomplish this complex and sometimes,
challenging dual role, childhood special education candidates complete two 14-week semesters
(1 year) of Clinical Practice.

Candidates provide instruction in two different settings (Specialized setting or a
Cooperative Team Teaching (CTT) classroom) during one semester and an Inclusive
classroom during the other semester. They also practice teaching students in two different
grade levels during these two semesters, a lower grade (1-3) and an upper grade (4-6) in their
elementary grade level assignments (Grades 1-6). These experiences serve to broaden the scope
of their practical experiences in teaching students with exceptional learning needs. Students in
the self-contained settings include students classified with severe to profound levels of
intellectual disabilities, speech/language disorders, autism, traumatic brain injury, cerebral palsy,
and other severe and multiple disabilities, whereas students in the inclusive and CTT settings
include students with and without mild to moderate forms of sensory, intellectual, physical and
emotional/behavioral disorders. Students with disabilities in these settings sometimes include
students at age-related multi-grade levels, based on the promotion criteria established at schools.
The selection of settings ensures that candidates’ clinical experiences include multiple settings
to demonstrate their specialty preparation, and meets the extensive requirements for dual-
certification.
Placement Decisions

To ensure that candidates gain the full experience of working with diverse students with a range of disabilities/exceptionalities, the Department’s special education clinical faculty and Field and Clinical Coordinator work collaboratively with partner school personnel to select experienced Cooperating Teachers who are licensed and practicing in the field to secure placements for childhood special education candidates. Site visits to schools and classrooms by clinical college faculty are carried out to verify suitability of placements. Conferences are held between cooperating teachers and clinical college faculty to discuss and review program expectations and assessment criteria prior to candidate placements to ensure that cooperating teachers understand their roles and responsibilities as facilitators and mentors for candidates and to establish a committed partnership in giving candidates the best classroom experiences.

Clinical Practice Evaluations

Evaluation of candidate performance during clinical practice experiences are conducted by both Cooperating Teachers and College Clinical Faculty using rubrics that incorporate the four assessment points identified in the model: Conceptualization/Planning, Implementation, Outcomes and Reflection. Each semester, the childhood special education candidate is formally observed and evaluated during the teaching of four subject area lessons addressing the appropriate Common Core Learning Standards: English Language Arts, mathematics, science, and social studies. In addition, each candidate must produce a videotaped lesson for evaluation. Therefore, over the two semesters of clinical practice, childhood special education candidates are
observed at least eight times, and engage in the evaluation of two videotaped lessons. After
classroom observation of each lesson, the candidate participates in a post-observation conference
with both clinical faculty and cooperating teachers to receive feedback on the implementation of
the lesson, including feedback on his/her professional dispositions during the observation.
Candidates are required to articulate this feedback in reflective essays to demonstrate their
understanding of the feedback as well as their openness to using suggestions to improve their
future practices.

The Conceptualization to Reflection Clinical Practice Model for Childhood Special
Education candidates encompasses five specific domains with key assessments at four critical
points for each observed lesson. Assessment is an integral part of the process as it informs
candidates about instructional decision making to improve student learning, evaluates student
achievement on various dimensions, and ultimately provides a basis for measuring program
effectiveness in teacher preparation. The comprehensive Childhood Special Education Clinical
Practice Evaluation Form is divided into three major Parts that encompass the four points of
evaluation: Part I – Conceptualization and Planning, Part II – (a) Implementation, (b)
Academic Content Area Methods, and (c) Candidate-Student Dispositions, and Part III –
Outcomes and Reflection. Inherent in these assessments are the specialty professional standards
that childhood special education candidates must meet: the Council for Exceptional Children
(CEC) Standards, the Association for Childhood International (ACEI) Standards, and the ed-
TPA framework, which are all closely aligned with the Department’s evaluation criteria. The
following summary table (Table 1) maps the assessment domains and their alignments to
professional Standards for Beginning Childhood Special Education Teachers.
<table>
<thead>
<tr>
<th>EVALUATION FORM</th>
<th>DOMAINS</th>
<th>EVALUATION CRITERIA</th>
<th>CEC</th>
<th>ACEI</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>CONCEPTUALIZATION and LESSON PLANNING</td>
<td>Central concepts, tools of inquiry and structures of content</td>
<td>CEC 1: Foundations [CC1K1-CC1K4; CC1K8, GC1K1-GC1K3]</td>
<td>ACEI 1.0 Development, Learning and Motivation ACEI 3.1 Integrating and Applying Knowledge for Instruction</td>
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<td></td>
<td>Conceptualizing Essay and Lesson Plan</td>
<td>Development and Characteristics of Learners</td>
<td>CEC 2: Development and Characteristics of Learners [CC2K1, CC2K2, CC2K5, CC2K6, GC2K1-GC2K5]</td>
<td>ACEI 3.2 Adaptation to Diverse Students</td>
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<td>ed-TPA TASK 1: Planning for Instruction and Assessment</td>
<td>Planning and Designing Innovative Learning Experiences</td>
<td>CEC 4: Instructional Strategies [CC4K1, GC4K1, GC4K4, GC4K5, CC4S3, CC4S4, GC4S7]</td>
<td>ACEI 3.3 Development of Critical Thinking and Problem Solving ACEI 3.4 Active Engagement in Learning</td>
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<td>Context for Learning Planning Commentary</td>
<td>Planning and Designing Appropriate Learning Environments</td>
<td>CEC 5: Learning Environments and Social Interactions [CC5K1-CC5K6; GC5K2, GC5K3, GC5S1]</td>
<td>ACEI 3.2 Adaptation to Diverse Students ACEI 3.3 Development of Critical Thinking and Problem Solving</td>
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<td>Lesson Plans for Learning Segments</td>
<td>Effective Communication</td>
<td>CEC 6: Language [CC6K4, GC6K2, CC6S1, CC6S2]</td>
<td>ACEI 3.5 Communication to Foster Collaboration</td>
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<td>Instructional Planning Methods</td>
<td>Effective Communication</td>
<td>CEC 7: Instructional Planning [CC7K1-CC7K5; GC7K1]</td>
<td>ACEI 3.1 – ACEI 3.5</td>
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<td>Assessments and Data Collection Procedures</td>
<td>Assessment</td>
<td>CEC 8: Assessment</td>
<td>ACEI 4.0 Assessment for</td>
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<td>EVALUATION FORM</td>
<td>DOMAINS</td>
<td>EVALUATION CRITERIA</td>
<td>CEC ALIGNMENT</td>
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<tr>
<td>(A) IMPLEMENTATION</td>
<td>Observation of Instructional Delivery</td>
<td>Teaching Learners with Diverse Needs</td>
<td>CEC 2: Development and Characteristics of Learners [CC2K1, CC2K2]</td>
<td>ACEI 1.0 Development, Learning and Motivation</td>
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<td>ed=TPA TASK 2: Instructing and Engaging the Focus Learner</td>
<td>Using Adaptations for Diverse Learning Differences</td>
<td>CEC 3: Individual Learning Differences [CC3K5]</td>
<td>ACEI 3.2 Adaptation to Diverse Students</td>
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<td>Instruction Commentary</td>
<td>Using Effective Strategies to Promote Active Engagement in Learning</td>
<td>CEC 4: Instructional Strategies [CC4S3, GC4S1, GC4S7, GC4S10]</td>
<td>ACEI 3.4 Active Engagement in Learning</td>
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<td>Video Clips</td>
<td>Practices and Behaviors of Developing Career Special Education Teachers</td>
<td>CEC 5: Learning Environments and Social Interactions [CC5S1, CC5S5, CC5S15]</td>
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<td>Video Clips</td>
<td>Using Effective Instructional Plans</td>
<td>CEC 7: Instructional Planning [CC7S1, CC7S9, GC7S2, CC7S11, CC7S12, GC7S1, CC7S13, CC7S15]</td>
<td>ACEI 3.1 – ACEI 3.5</td>
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<td>Instruction Commentary</td>
<td>Using Appropriate Assessments for</td>
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<td>(B) CONTENT AREA INSTRUCTIONAL METHODS</td>
<td>Observation of Instruction</td>
<td>Instruction Commentary</td>
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<td>English Language Arts</td>
<td>CEC 4: Instructional Strategies [GC4K7, GC4S4, GC4S11, GC4S13, GC4S14, GC4S16]</td>
<td>CEC 8: Assessment [CC8S8]</td>
<td>ACEI 2.1 Reading, Writing and Oral Language</td>
<td>ACEI 2.5 The Arts</td>
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<td>Instruction Commentary</td>
<td>Science</td>
<td>CEC 4: Instructional Strategies [CC4S3, GC4S7, GC4S13]</td>
<td>CEC 7: Instructional Planning [CC7S5, CC7S11]</td>
<td>CEC 8: Assessment [CC8S8, GC8S3]</td>
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<td>Instruction Commentary</td>
<td>Social Studies</td>
<td>CEC 4: Instructional Strategies [CC4S3, CC4S7, CC4S13]</td>
<td>CEC 7: Instructional Planning [CC7S8, CC7S11]</td>
<td>CEC 8: Assessment [CC8S8]</td>
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<td>(C) DISPOSITIONS</td>
<td>Encourages Student Participation</td>
<td>CEC 5: CC5S4</td>
<td>ACEI 3.4</td>
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<td>Observed Candidate-Student Interactions</td>
<td>Calls on students Equally</td>
<td>CEC 5: CC5S1</td>
<td>ACEI 5.1</td>
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<td>EVALUATION CRITERIA</td>
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<td><strong>PART III</strong></td>
<td>OUTCOMES</td>
<td>Lesson Summary</td>
<td>CEC 4: Instructional Strategies [CC4S4]</td>
<td>ACEI 3.1 - ACEI 3.5</td>
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<td>(Assessment 3)</td>
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<td>Ed-TPA TASK 3:</td>
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<tr>
<td>Assessing Learning</td>
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<tr>
<td>Student Data</td>
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<tr>
<td>Completed Final Assessments</td>
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<tr>
<td>Samples of Student Work</td>
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<tr>
<td>Completed Daily Assessment Records and Baseline Data</td>
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<tr>
<td>Assessment of Student Learning</td>
<td></td>
<td>CEC 8: Assessment [CC8S5, CC8S7]</td>
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<td>ACEI 4.0 Assessment for Instruction</td>
</tr>
<tr>
<td><strong>PART IV</strong></td>
<td>REFLECTION</td>
<td>Reflective Essay</td>
<td>CEC 9: Professional and Ethical Practice [CC9S8, CC9S9, CC9S11]</td>
<td>ACEI 5.1 Professional Growth, Reflection and Evaluation</td>
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<td>(Assessment 4)</td>
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<td>Evidence of Feedback</td>
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These key assessment points reflect the Childhood Special Education clinical practice model, which begins with conceptualizing and planning to teach academic content to students with disabilities, actually teaching those lessons, then assessing student learning and understanding of the content, and using student baseline and performance data to finally reflect on one’s competency as a teacher.

**EVALUATION INSTRUMENTS**

The Clinical Practice Assessment Form uses the CEC Standards 1 to 10 as the basis for assessing Childhood Special Education candidates’ knowledge, skills and dispositions. In most cases, the assessment is further aligned with specific elements from the Individualized Common Core (ICC) and the Individualized General Curriculum (IGC) for beginning teachers of students with exceptional learning needs. The form is subdivided into four major parts:

*Conceptualization/Planning, Implementation, Outcomes* and *Reflection* to reflect the key objectives of the clinical practice experience that assesses Childhood Special Education candidates’ knowledge, skills and dispositions as well as their effects on student learning.

In planning and teaching integrated subject area lessons for elementary students with disabilities, candidates must first demonstrate their proficiencies in four academic content areas: *English Language Arts, mathematics, science* and *social studies*. Subject area assessment rubrics were collaboratively developed by special education and discipline-specific department faculty who teach these content area methods courses to ensure coherence with specialty standards. These rubrics are included in the comprehensive clinical practice assessment instrument and are used to evaluate candidates’ knowledge and skills in planning and teaching these critical content areas to students with exceptional learning needs.
THE CLINICAL PRACTICE MODEL

[Insert Graphic Here]

PART I: PLANNING

STEP 1a: THE CLASSROOM PORTRAIT

Candidates in the Childhood Special Education program are required to submit a School and Classroom Portrait to their College Clinical Supervisor during the first week of Clinical Practice. This Portrait provides a snapshot of the setting in which candidates are student teaching and includes details about the school, administration, community, student profiles, resources, and activities. More importantly, the classroom portrait provides information about the characteristics and needs of students so that clinical faculty can accurately judge whether candidates are catering to all the diverse needs of their learners in their conceptualizing and planning of instruction. In addition, a technology inventory informs the clinical faculty and the candidate about the resources available to support their instructional practices or the need to provide additional technology resources, including assistive and augmentative technology to implement lessons.

Components of School and Classroom Portrait

- Demographics of School
- Demographics of Classroom
- Special Features
- Technology Inventory
STEP 1b: CONCEPTUALIZING ESSAY

In PART I – Conceptualization, candidates are required to articulate their knowledge of special education content across all of the ten CEC Standards: Foundations, Development and Characteristics of Learners, Individual Learning Differences, Instructional Strategies, Learning Environments and Social Interactions, Language, Instructional Planning, Assessment, Professional and Ethical Practice and Collaboration. This knowledge base must be reflected in candidates’ conceptualizing essays and lesson plans to show candidates’ understanding of central concepts, tools of inquiry and structures of special education content (CEC 1). Knowledge about the development and characteristics of learners (CEC 2), and the impact of exceptional conditions on development, learning and motivation are requisite to teaching students with the full range of disabilities (CEC 3). Childhood special education candidates must know evidenced-based instructional strategies to plan and design innovative learning experiences (CEC 4) and must demonstrate knowledge of effective classroom management, behavior interventions and management to meet the individual and collective needs of students (CEC 5). In their conceptualizing essays, candidates’ must demonstrate the use of effective communication in articulating their own ideas about teaching and learning and know how to cater to the cultural and linguistic differences found among students in diverse learning environments (CEC 6).

The background knowledge from all the previous standards serves as the foundation on which candidates show their knowledge of instructional planning methods. Candidates must create lessons that give evidence of their knowledge of the Common Core Learning Standards, the City’s Scope and Sequence as well as the learning goals for elementary education in the
relevant content areas their lessons address. They must show how they use special education principles, such as modifications and accommodations to adapt instruction, including technology enhanced instruction, for their students with disabilities (CEC 7). Candidates must design assessments for each lesson – whether formal or informal, formative or summative – that accurately and fairly assess acquisition of knowledge and skills by diverse students with the full range of disabilities (CEC 8). Childhood Special Education candidates must articulate in their conceptualizing essays their knowledge of professional and ethical practice, including their respect for diversity, their stance as reflective practitioners and their willingness to explore the various institutions in the field of special education and grow as a professional (CEC 9).

Candidates must also discuss their collaborative responsibilities with their cooperating teachers and other school personnel, families and service providers as well as their ongoing consultation with their college supervisors (CEC 10).

The Conceptualizing Essay and Lesson Plan are done simultaneously to comprehensively reflect the thought process used for planning instruction for diverse Elementary school learners. On completing each conceptualizing essay and the lesson plan, the candidate submits these planning documents to their college supervisor who reviews their work, assesses it for readiness to implement and provides feedback to the candidate. The college supervisor uses the prescribed assessment rubric to evaluate the candidate’s conceptualizing essay and lesson plan. This evaluation is also formally discussed during the pre-conference meeting between the college supervisor and the candidate to ensure that the candidate is confident about the lesson objectives and teaching points as articulated in the written planning documents, as well as to provide opportunities for clarity of any recommendations made by the college supervisor.
Components of the Conceptualizing Essay

- The academic content to be learned by the students
- The purpose and use of the content for students
- The Common Core Learning goals addressed in the lesson
- The Candidate’s alignment with specialty professional Standards
- The Candidate’s knowledge base that influences the lesson (courses, literature, theories, research-based strategies, etc.)
- Any special characteristics about the students that will influence how candidates develop and implement the lesson, e.g. ELL, disability areas, special accommodations, modifications, etc.

STEP 2: LESSON PLANNING

Childhood Special Education candidates are required to adopt an inclusive stance to planning instruction for their learners. By inclusive, the author posits that a combined focus on general education curriculum content (academic subject areas) as well as individualized curriculum goals (based on the individual learning needs of students) form the basis for instructional planning. The aim of each lesson is to ensure that subject area knowledge is adapted to meet the individual needs of all learners. A recommended lesson plan format helps to guide candidates in addressing all the various components to consider when planning instruction for diverse learners with diverse abilities. This guide also serves as an audit for instructional planning in that it allows candidates to zero in on the key considerations for each lesson.
Recommended Childhood Special Education Lesson Plan Format

Candidate’s Name: 

College Supervisor’s Name: 

Cooperating Teacher’s Name: 

Clinical Practice Site (i.e., PS XX)

Date: 

Time: 

Grade Level: 

Room #

Components

Questions to Guide Your Planning

I. Standard(s) Being Addressed 

What are the State standards for learning you are addressing in this lesson? How does your lesson show evidence of connections between what you are asking students to do and the standard(s) you are addressing?

II. Essential Question 

Can you think of a global question around which to create your lesson?

III. Teaching Point/Performance (GOALS) 

What will students learn? What will students do in order to meet the learning goals?

IV. Learning Activities

A. Mini Lesson 

Do you know your students well? When you do, you can plan learning to build on who they are. How does today’s lesson connect to previous learning? How does this lesson anticipate what will come next? What activities/what demonstrations will you structure and design in order to get students involved in learning that will build on who they are? What instructional adaptations are you making to ensure that all your students, including students with disabilities are actively involved in the learning process?

How will the materials/activities/content for learning be introduced to students? How will you demonstrate your teaching point/what you want students to learn?

B. Accountable Talk 

What will you ask students to talk about and what will you look for in student’s talk that will help you to know whether students are connecting to the Teaching Point/Performance Goals?
C. Guided Practice
How will students practice with your assistance or the assistance of peers what they are being asked to learn?

What activities/structures/materials will you provide for students to practice and reach the lesson’s goals?

D. Independent Practice
How will students practice what they are being asked to learn?

What activities/structures/materials will you provide for students to practice independently what they are learning in order to reach the lesson’s goals (whether in the classroom or at home)?

E. Adaptations
What accommodations and modifications will you include in this lesson to meet the individual learning needs of your students?

**Accommodations:**
Highlight the different learning needs of your students and summarize the accommodations you will make based on their individual learning differences.

**Modifications:**
How will you modify guided and independent tasks to meet the needs of your learners?

F. Summary
How will you connect the lesson goal(s) to previous learning and to learning that will continue into the future, so that students can feel they have learned and that what they have learned fits into other learning they have engaged in?

IV. Assessment/Evaluation of Learning
How will you know that all students have learned? What rubric will you use (what are your criteria for learning)? What modifications will you consider in assessing student learning? What activities/materials will you develop that will assist you in assessing what, how and why students learned and reflect the criteria you developed?

How will you reflect on the lesson and assess what occurred?
Feedback and Revisions

Prior to teaching an observed lesson, candidates meet with both their cooperating teachers and college supervisors to discuss their ideas for each lesson based on their classroom portraits, learning goals and curricula content to be covered by students in their respective settings. Using a Planning Rubric, candidates receive detailed and descriptive feedback from first the Cooperating teacher and then the College Clinical Supervisor on their lesson plans and conceptualizing essays. Candidates use this feedback to make adjustments or revisions accordingly before teaching each lesson. Candidates collaborate with cooperating teachers and college clinical supervisors to schedule observation dates and times for implementation of each lesson.

PART II: STEP 3: IMPLEMENTATION OF LESSON

PART II of the clinical practice assessment includes three subsections that focus on: (a) demonstration of teaching skills, (b) application of developmentally appropriate academic content, and (c) candidate dispositions as they interact with students. These dimensions are aligned mainly with CEC Skill-Based Standards from the CEC Initial Level Skill Sets in the Individualized General Education Curricula (IGC). During observation sessions, Childhood Special Education candidates are evaluated by partner school cooperating teachers and college clinical supervisors on the dimensions listed below.
(a) Demonstration of Teaching Skills

Teaching Students with Diverse Needs - Candidates’ lessons must reflect their awareness of the diverse characteristics presented by the students they are teaching and show that they are implementing adequate supports for them [CEC 2: ICC2K1, ICCEK2].

Using Adaptations for Diverse Learning Differences - Candidates’ instructional delivery must show how they use individualization, differentiation, accommodations and modifications to meet the individual learning styles and needs of their students [CEC 3: ICC3K5].

Using Effective Strategies to Promote Active Engagement in Learning, including Technology-Enhanced Instruction – Candidates’ lessons must highlight the use of evidence-based effective strategies, including the use of technology to teach requisite academic and nonacademic content. They must demonstrate abilities to select, adapt and use these strategies efficiently to promote active student learning [CEC 4: ICC4S3, 1GC4S1, IGC4S7, IGC4S10].

Practices and Behaviors of Developing Career Special Education Teachers – Candidates’ demonstration of teaching students with ELN must reflect their abilities to manage their classrooms effectively using positive behavioral intervention and supports, restating behavior expectations with students, and providing clear instructions for smooth transitions from activity to activity. Candidates must demonstrate positive teacher attitudes towards their students, other teachers and paraprofessionals in the classroom [CEC 5: ICC5S1, ICC5S5, ICC5S15].
Effective Communication – Candidates must model effective language with their students and use communication strategies and resources that promote student understanding of subject matter as well as enhance student communication skills, including the use of alternative and augmentative communication systems, when and where necessary [CEC 6: ICC6S1, ICC6S2, ICC6S4].

Using Effective Instructional Plans – Candidates must show connections to the scope and sequence and identify the learning objectives they are addressing in their lessons based on NY Content Area Curriculum. Their lessons must reflect adaptations of instruction and environment, and incorporation of instructional and assistive technology as needed to meet the individual needs of their students [CEC 7: ICC7S1, ICC7S9, ICC7S11, ICC7S12, ICC7S13, ICC7S15, IGC7S1, IGC7S2]

Using Appropriate Assessments for Instruction - Candidates must demonstrate their use of Curriculum-Based Assessments, as well as informal assessments throughout their lessons to monitor students’ understanding and mastery of subjects. They must show how they use assessment results, such as anecdotal notes to inform and guide their instruction, and provide feedback to students [CEC 8: ICC8S2, ICC8S4, ICC8S8; IGC8S3].

b) Content Area Knowledge and Skills

Application of Developmentally Appropriate Academic Content

Childhood Special Education candidates must demonstrate proficiencies in teaching general education academic content to students with exceptional learning needs. As such, they must show how they integrate and adapt instruction, assessments and environments, including making appropriate modifications and accommodations to meet the individual needs of their
students in Grades 1-6. These considerations are aligned mainly with specific elements from the Individualized Common Core and General Curriculum of CEC Standards 4 – Instructional Strategies, 7- Instructional Planning, and 8-Assessment. Candidates must demonstrate and are evaluated on their abilities to teach lessons in the following four academic content areas, including the use of instructional and assistive technology:

(i) **English Language Arts** – Candidates must demonstrate the use of reading methods that are appropriate for students with disabilities (IGC4S4) and guide students in identifying and organizing critical information (IGC4K7). They must teach students to use important concepts, vocabulary and content across the general curriculum (IGC4S13) and use strategies and techniques to strengthen and compensate for any deficits in perception, comprehension, memory and retrieval (IGC4S11). When teaching ELA content, candidates must demonstrate the use of systematic instruction to teach accuracy, fluency, and reading comprehension as well as writing (IGC4S14, IGC4S16). CSE candidates must evaluate their teaching of ELA and show how they are monitoring the progress of their students during and after teaching each lesson (ICC8S8).

(ii) **Mathematics** – The main objective of teaching mathematics to students is to increase their accuracy and proficiency in math calculations and applications (IGC4K6), and as such, CSE candidates must demonstrate the use of appropriate methods to teach mathematics to students with ELN (IGC4S5). Candidates must use appropriate adaptations and technology (IGC4S7), use responses and errors to guide instructional decisions and provide feedback to students (IGC4S12), and use task analysis approaches (ICC7S5) when teaching mathematics content to
students with ELN. Candidate must demonstrate ways that they are evaluating and modifying instructional practices in response to ongoing assessment data (ICC7S15), and show their modified and differentiated individualized assessment strategies that they use to evaluate instruction and monitor progress of their students with exceptional learning needs (ICC8S4, ICC8S8).

(iii) **Science** – In teaching science content, candidates must demonstrate their abilities to select, adapt, and use instructional strategies and materials according to the characteristics of their students with exceptional learning needs (ICC4S3). They must use appropriate adaptations and technology (IGC4S7), and identify and teach essential science concepts, vocabulary, and content across the general curriculum (IGC4S13). Candidates must demonstrate the use of task analysis (ICC7S5), and prepare and organize their materials to implement science lesson plans (ICC7S11). Candidates must develop, modify and use individualized assessment strategies to accommodate the unique abilities and needs of individuals with exceptional learning needs (ICC8S3), and evaluate instruction and monitor progress of their students during their lessons (ICC8S8).

(iv) **Social Studies** – CSE candidates must demonstrate their abilities to select, adapt, and use instructional strategies and materials to teach social studies content based on the characteristics of their students with exceptional learning needs (ICC4S3). They must show that they are able to develop and select instructional content, resources, and strategies that respond to cultural, linguistic, and gender differences (ICC7S8), use appropriate adaptations and technology (IGC4S7), and identify and teach essential social studies concepts, vocabulary, and content
across the general curriculum, including teaching students about diversity (IGC4S13). Candidates must prepare and organize their materials to implement social studies lesson plans (ICC7S11) so that all students are purposefully engaged in the lessons. Candidates must evaluate instruction and monitor progress of their students during their lessons (ICC8S8).

(d) Candidate-Student Interactions: Dispositions Assessment

Candidates are also assessed on 13 dispositions to evaluate their competencies in working with diverse students with ELN. The disposition competencies are aligned with CEC Standards 4 and 5, but specifically to elements in the Core Curriculum and the Individualized General Curriculum. Elements in Standard 4 that are addressed assess candidates’ modeling of self-assessment, problem-solving and critical thinking strategies as they teach students to use these techniques (ICC4S2) and their ability to modify the pace of instruction and provide organizational cues for students (IGC4S6). Candidates are required to demonstrate the use of student responses and errors to guide their instruction and provide timely feedback to students (IGC4S12). In reinforcing effective candidate-student interactions during instruction, elements of Standard 5 are assessed. Candidates must ensure safe, equitable, positive and supportive learning environments by giving students equal turns (ICC5S1), encourage active participation in individual and group activities by providing individual help, affirming students’ correct responses, giving praise and citing the reasons for praise, and teaching students how to give and receive meaningful feedback from others (ICC5S4; IGC5S4). Candidates must model respect and use skills to resolve conflicts (IGC5S5), and create an environment that encourages self-advocacy, positive intracultural and intercultural experiences for students by listening to them and accepting their feelings (ICC5S9, ICC5S13).
College clinical supervisors and cooperating teachers use a Dispositions rubric below to evaluate childhood special education candidates’ dispositions during implementation of each lesson. The goal is to provide adequate feedback on dispositions to candidates so that they can continually grow into their professional roles as teachers.

**Table 2: Candidate Dispositions Assessment**

<table>
<thead>
<tr>
<th>DISPOSITIONS</th>
<th>CEC ALIGNMENTS</th>
<th>Exemplary (3)</th>
<th>Competent (2)</th>
<th>Emerging (1)</th>
<th>Unsatisfactory (0)</th>
<th>COMMENTS</th>
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<tbody>
<tr>
<td>Encourages participation.</td>
<td>ICC5S4</td>
<td></td>
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<tr>
<td>Calls on students equally.</td>
<td>ICC5S1</td>
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<td>Offers individual help.</td>
<td>ICC5S4</td>
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<td>Waits for students to respond.</td>
<td>IGC4S6</td>
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<td>Delves deeper into subject matter.</td>
<td>ICC4S2</td>
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<td>Asks higher-level questions.</td>
<td>ICC4S2</td>
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<td>Gives feedback.</td>
<td>IGC4S12</td>
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<td>Affirms correct responses.</td>
<td>IGC5S4</td>
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<td>Gives praise and cites reason(s) for praise.</td>
<td>IGC5S4</td>
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<td>Listens closely.</td>
<td>ICC5S9</td>
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<tr>
<td>Accepts students’ feelings.</td>
<td>ICC5S13</td>
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<td>Shows respect.</td>
<td>IGC5S5</td>
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<td>Is courteous.</td>
<td>IGC5S5</td>
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<tr>
<td>Is courteous.</td>
<td>IGC5S5</td>
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Disposition rubric adapted from the Los Angeles County Office of Education Teacher Expectations & Student Achievement (TESA).

**OBERVERS’ FEEDBACK – POST OBSERVATION CONFERENCE**

A post-observation conference with the candidate, cooperating teacher and the college clinical supervisor is held immediately after each observed lesson to provide feedback to the candidate regarding professional demonstration of instruction for students with exceptional learning needs. Following this conference, candidate must **submit reflections on student**
outcomes based on assessments used during lesson implementation, including samples of student work and data tables. Candidates must also write a reflective essay that summarizes the practical experience and their self-evaluation of their instructional delivery knowledge, skills and dispositions.

PART III: POST-OBSERVATION OUTCOMES.

Candidates are encouraged to use assessment data and feedback from observers to reflect on their practices as teachers of students with exceptional learning needs. PART III of the Clinical Practice Assessment focuses on Outcomes of each observed lesson and reflection on student learning. Candidates are required to show how the students’ performance data tables from the evaluation of each lesson taught inform them about what children know, learned and need to practice more, about which children master the content taught, which ones are getting it but need more practice, and which students may need a re-teaching of the concept. Candidates’ extension activities are included so that students gain more opportunities in and beyond the classroom environment to generalize and maintain knowledge of concepts learned. Teacher candidates in conjunction with their cooperating teachers continue to review and incorporate prior knowledge in subsequent lessons to monitor students’ progress and to ensure that all students master the content.

By engaging in the above activities, CEC Standards 4, 8, 9 and 10 are further addressed in candidates’ assessment and reflections on student work, and on their self-reflections for all eight lessons taught. Having collaborated with their cooperating teachers and, sometimes, grade level curriculum teams (CEC 10: ICC10S9, IGC10K4), candidates must discuss how their
assessments confirm children’s learning, how children varied in their responses to the assessments and why, and provide possible revisions to the assessments given the results and their own thoughtful critiques (CEC 8: ICC8S5, ICC8S7). In their overall self-reflections, candidates are required to reflect critically on lessons taught to consider how to provide more productive learning opportunities for children and how to shape their own teaching to do so (CEC 9: ICC9S8, ICC9S9, ICC9S11). They must consider in these reflections how the children in their classrooms differ and how that knowledge informs them about using families, colleagues and the larger school community, as well as the larger surrounding community to support children’s learning (CEC 4: ICC4S4).

PART IV: REFLECTION

STEP 5a: REFLECTIVE ESSAY

Childhood Special Education candidates are required to reflect on the outcomes of each lesson. In their reflective essay, candidates discuss the outcomes of the lesson in relation to how they conceptualized and implemented it. They reflect on the feedback from their cooperating teacher and clinical supervisor during the post-observation conference as well as their own feelings about what worked and what they could have done differently. Candidates analyze the student performance data to further understand the impact of their instruction on student learning. They discuss how they will use this information to enhance their own practice and improve student learning in future lessons (CEC 9).

In addition to reflecting on their own teaching and student outcomes, candidates also reflect on other dimensions that influence their clinical experiences, including classroom management practices, their dispositions and their collaboration with classroom personnel. As
special educators, teacher candidates are required to demonstrate their ability to work collaboratively with other professionals and support personnel to ensure that all children have appropriate and adequate support and guidance during instruction (CEC 10). They must also demonstrate the appropriate dispositions to promote social learning and engagement among students and show that they know and can use research-based behavior management strategies to maintain a positive learning environment (CEC 5).

STEP 6: TEACHING VIDEO

One of the most authentic assessments of instructional delivery and its impact on student learning is through the review of videotaped lessons. From 2007, this model emphasized this element of teacher preparation as part of the reflective process. CEC Standards 3, 8, 9 and 10 are further addressed in candidates’ assessment and reflections on student work, and on their self-reflections for all four lessons taught. Having collaborated with their cooperating teachers and, sometimes, grade level curriculum teams, candidates must explain how their assessments confirm children’s learning, how children varied in their responses to the assessments and why, and provide possible revisions to the assessments given the results and their own thoughtful critiques. In their overall self-reflections, candidates are required to reflect critically on lessons taught to consider how to provide more productive learning opportunities for children and how to shape their own teaching to do so. They must consider in these reflections how the children in their classrooms differ and how that knowledge informs them about using families, colleagues and the larger school community, as well as the larger surrounding community, to support children’s learning.

Candidates are required to videotape two lessons they conduct over the one-year experience of Clinical Practice. In the past, the videos were watched only by candidates and
their college supervisors. During January 2008 semester in which candidates attended winter intercession workshops provided through a US Department of Education Office of Special Education Programs (OSEP) grant, entitled “Preparing a New Cadre of Special Educators” (PANCOSE), the videos were used as a way to reflect on the first semester of clinical practice before candidates proceeded to their second semester-long experience. There was great success with this, and this practice was incorporated into the model so that this video critique and deconstruction became a regular part of all candidates’ learning.

Videos are accompanied by a copy of the candidates’ lesson plans, so that candidates can talk about and reflect on the relationship between planning and implementation. However, the entire video is viewed so that candidates can talk about motivation in learning, classroom climate, lesson and demonstration effectiveness, and dispositions. Candidates also learn how to talk critically about teaching and learning. This kind of critique is used constructively to improve teaching not to destroy the confidence of the candidate. All of this has had a positive effect on how well candidates are learning to teach: viewing videos together brings out the areas for explicit assessment, so that everyone is privy to this knowledge and candidates are exposed to how their peers teach. Such knowledge assists their own teaching by providing positive models and ways to reimagine what candidates already can do.

STEP 7: PORTFOLIO PRESENTATION AND EXIT CONFERENCE

The Exit process is the informal discussion between each candidate and clinical faculty about the overall clinical experience and includes the candidate’s evaluation of placement sites and their cooperating teachers. It is where candidates provide evidence of their knowledge,
skills, and dispositions related to professional practice of teaching and learning. They review their lesson packets, student outcomes data, the feedback from cooperating teachers and clinical faculty, their prior reflections on the observed lessons and write a new reflective essay of their growth in the professional field. This self-evaluation also includes their assessment of how they met professional standards based on their respective specialty organizations, always with the constructive eye on lessons learned and areas for improvement.

**SUMMARY**

The *Conceptualization to Reflection* Clinical Practice model for teaching students with exceptional learning needs in the elementary classroom has proven to be a useful tool in the evaluation of teacher candidates’ knowledge, skills and dispositions in the following ways:

1. It shows candidates’ ability to think deeply about appropriate and effective instruction for diverse learners;

2. It shows candidates’ own knowledge of subject matter as they prepare lessons in all critical academic content areas;

3. It shows candidates’ ability to connect theory to practice as they utilize some of the scientifically proven approaches and research-based strategies for teaching students with various disabilities;

4. It reflects candidates’ attitudes towards teaching students with disabilities in various settings and under practical, real-life circumstances; and
5. It reflects candidates’ ability to work collaboratively with others in the entire school community to meet the needs of ALL students.

With the recent adoption of ed-TPA (2013) as a New York State requirement for initial teacher certification, this Medgar model was well ahead of the curve in adopting frameworks for assessing effective teaching. Candidates will already have had the experience of constructive critique and reflection necessary to engage in formal evaluations of their teaching. It has led to the increased recruitment, hiring and retention of dual-certified teachers from Medgar Evers College into public and charter schools serving students with disabilities. According to Ronfeldt (2012), “Teachers who learned to teach in field placement schools with higher proportions of black, poor, and low achieving students were no more or less effective as permanent teachers, nor likely to remain teaching in NYC schools.” However, the College’s emphasis on serving these underserved groups contributes to the consistent pattern of recruitment and retention of its teachers in Central Brooklyn schools. From 2008 to 2013, 90-95% of graduates gained employment in these urban schools and retained their positions while 80-85% continued graduate studies towards the professional licensure and tenure track.

This Conceptualization to Reflection Clinical Practice model was piloted in 2004 and was tested and revised over the years as feedback from cooperating teachers, partner schools, candidates, clinical faculty and professional accreditation organizations helped to refocus and refine the assessment instruments. The result of this continuous improvement in the clinical practice experiences for teacher candidates is the very intensive and comprehensive process that takes teacher candidates from conceptualization to reflection over a one-year period of on-site supervised teaching practice, working with diverse learners in different settings in urban schools.
References


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THE CHILDHOOD SPECIAL EDUCATION (CSE) CLINICAL PRACTICE EXPERIENCE MODEL

PART I
PLANNING

ASSESSMENT 1

CONCEPTUALIZATION
School & Classroom Portrait
Conceptualizing Essay, including
Student Learning Goals
Candidate Knowledge Base
Special Learner Characteristics

STEP 1

LEsson PLANNING
Lesson Plan Template
Lesson Plan Audit
PLANNING Assessment Rubric
Faculty Feedback

STEP 2

LEsson ImPLeMEnTATION
Academic Instructional Delivery
Student Learning Assessments
IMPLEMENTATION Assessments
Post-Observation Conference

STEP 3

PArT II
IMPLeMEnTATION

ASSESSMENT 2

PArT III
OUTComES

ASSESSMENT 3

OUTComES
Student Performances
Data Tables
Exemplars of Student Work
Analysis of Student Performance
OUTComES ASSESSMENT

STEP 4

PArT IV
REFLECTION

STEP 5

REFLECTION
Candidate Reflective Essay
Objectives Achieved
Lesson Learned
Future Improvements

STEP 6

EXIT CONFERENCE

VIDEO SUBMISSION
ed-TPA

STEP 7
This poster presentation will share initial results of an exploratory research project designed to gain greater understanding of the student experience in global education programs (GEPs); with a focus on a specific GEP - the Mount Royal University (MRU) India field school 2014. 27 students participated in India 2014, during the month of May. As part of the process students took part in an extended pre-departure process, which included educational, personal and logistical preparation. Student views and attitudes over the value of this process were captured in both pre and post field trip questionnaires. The HICE presentation (January 2015) will focus more specifically on the students’ motivation in choosing to participate in the India field school project. Global education projects are a significant academic offering of institutions of higher learning, and these institutions will benefit from developing a deeper understanding why students take part in a GEP, and their expectations in doing so.
Spelling-Sound Discrepancy and its Effect on Memory of New Words in L2

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Abstract

The purpose of this study was to determine whether type of grapheme–phoneme discrepancy (having a silent letter vs. having a wrong letter) had differential effects on memory of the phonological forms of new words and their processing rate in a L2 with a different script from the L1. To this purpose, 20 Persian speaking learners of English participated in a two phased experiment. First, they studied 34 pseudowords including 5 with a silent letter, 6 with a wrong letter, and 6 with congruent graphemes and phonemes. They saw a picture showing the concept the item expressed and the written form underneath, and they listened to the phonological form of the item. Then they received an auditory matching memory test in which they had to match the auditory name of the item with the correct picture. The pseudowords were presented through the Microsoft Power point software (2013) and the memory test was presented through the DMDX software (Forster & Forster, 2003). The paired samples t test was used to compare the performances on silent and wrong letter items. The results showed no effect of item type on accuracy and processing time. In other words, no difference was found for retrieving the correct meaning of the two different types of grapheme-phoneme discrepancies. The findings indicate that when learners learn a new language with a different script they may not pay a lot of attention to the written form, especially when the retrieval task requires the leaners to focus on the meaning and not the spelling of the words. Therefore, presenting or depriving the learners from the writing form does not make a big difference for learners in the early stages of learning new words.

Keywords: Orthography, Phonology, L2 word learning, accuracy, processing time, DMDX software
Introduction

The relationship between the orthographic and phonological forms of words varies across languages. Languages like Serbo-Croatian (Katz & Feldman, 1981) allow transparent relationship between the two. It means that grapheme–phoneme relationship is consistent and invariant. Therefore, the pronunciation of a novel word can be predicted by a relatively small set of rules. In English, however, the correspondence between spelling and sound is not transparent and there is not a perfect relationship between phonemes and graphemes representing those sounds. A phoneme can be realized by many different graphemes (e.g., /aI/ in mine, pie, and my), and a grapheme can also be realized by many different phonemes (e.g., the letter a in fate, pat, and wash). Besides, some letters are not pronounced (e.g., knight, psychology) while others might have wrong pronunciations (e.g., pizza, Xerox).

Although identification of written or printed words begins with the visual processing of letter symbols, there is substantial evidence that the phonological information behind the orthographic representations plays a crucial role in the process. In early studies, it was revealed that recoding of orthography to phonology occurs during or even before readers' access to the lexical entries of visually presented words. In lexical identification tasks, responses to target words can be printed by prior or immediately subsequent exposure to phonologically similar visual words (e.g., Bernet & Perfetti, 1995; Brysbaert, 2001; Drieghe & Brysbaert, 2002).

Orthographically presented words have been shown to activate phonological information, which is then used in identifying words and hence their meanings. In semantic categorization tasks where participants are asked to decide whether a particular word is a member of a semantic category (e.g., FLOWER), participants are more likely to commit false positive errors for homophone controls (e.g.,
ROWS) and pseudo-homophones (e.g., ROWZ) than for a spelling-matched control (e.g., ROBS, in Van Orden, Pennington, & Stone, 1990). This indicates that words that share phonological representations are confusable because identification of visually presented words depends on the phonological information readers access in orthographic words.

In Ota, Hartsuiker and Haywood (2009), three groups of participants including native speakers of English, Japanese, and Arabic were asked to do a semantic-relatedness judgment task on some English words. Native speakers of English were less accurate and slower in rejecting pairs that contained a word with a homophone related to the other member of the pair (e.g., MOON-SON) in comparison to spelling controls (e.g., MOON-SIN). This was also the case with the nonnative speakers of English, demonstrating that the phonology of L2 words is being processed in L2 visual word recognition too. The nonnative participants also exhibited homophone-like effects in judging pairs that contained a word differed phonologically from a related word by a segmental contrast missing in their L1. The results of this study show that not only phonological mediation can take place in bilingual visual word recognition but also that the phonology of L1, in addition to that of the L2, is active in the silent reading of L2 words.

It is worth and vital that orthographic knowledge modifies the nature of the mentally stored phonological information, and that the influence of orthography on spoken word processing arises indirectly from this phonological representation (e.g., Peereman et al., 2009; Perre et al., 2009). A description of how orthography might be included in the phonological system is given by Taft (2006b), who proposes an abstract phonological level of representation directly reflecting the pronunciation of the spelling of the word (i.e., an orthographically influenced phonological representation or “OIP”). For example, the word corn is represented at the OIP level with a post-vocalic r (i.e., /kɔrn/) even for non-rhotic speakers of English who do not pronounce the postvocalic r [kɔːn]. The evidence comes from the fact that non-rhotic
English speakers find it hard to recognize the homophony of a pseudohomophone that conflicts with its base word in terms of a post-vocalic r (Taft, 2006). For example, many non-rhotic speakers do not realize *cawn* is homophonic with *corn* unless they read it aloud. This implies that the representation of *or* and *aw* do not match in the underlying phonological system, and only coincide at the surface phonetic level.

As mentioned before, most research studies show the mediation of phonological knowledge in orthographic knowledge in word recognition and meaning retrieval. However, when it comes to learning new words in L2, the nature of interaction between the two systems might be questioned. Do L2 learners pay attention to the orthographic representation and use it as a cue for learning new words and their meaning retrieval later, especially when there is no one to one relationship between the phonological and orthographic representation? The issue is worth studying as research shows the mediation of phonological knowledge in word recognition and meaning retrieval in many cases. In fact, the question would be if orthography can be an important factor in learning new words in L2 and if the discrepancy between the phonological and orthographic knowledge can make a difference. In a nutshell, this study will provide grounds for investigating whether it is better to teach the spelling of new words along with the phonological representation when there is a discrepancy between the two. The following research questions are addressed in this study.

1. Do differences in grapheme-phoneme representation of pseudowords, having a silent letter, help learners to recall the meaning of pseudowords better and faster?

2. Do differences in grapheme-phoneme representation of pseudowords, having a wrong letter, help learners to recall the meaning of pseudowords better and faster?
2. Methodology

2.1 Participants

Twenty pre-IELTS male and female students who were studying English at Danesh Pajouhan institute in Esfahan, Iran, were selected to take part in the study. They were native speakers of Persian and their knowledge of English was limited to the courses they studied in language institutes and universities. Furthermore, they never had exposure to English in natural settings.

2.2 Materials

This experiment contained two phases: 1- studying phase and 2- testing phase.

2.2.1 Studying Phase

A list of 46 pseudowords with a byssillabic structure CVCV(C) containing phonemes that exist in English was selected. They were produced by Wuggy Generator Software. Each pseudoword was assigned a specific picture in order to make it meaningful. They were presented through the Power Point software (2013) such that each picture was displaying simultaneously with its written form and its pronunciation. Three kinds of items were used in the study phase (Table 1): (A) 6 congruent items with regular phoneme-grapheme correspondency (e.g. the spoken form [raudət], the written form <Rodat>, picture of panda), (B) 6 incongruent items with a silent-letter in written forms (e.g., the spoken word [b^nItl]), the written form <Butil>, picture of apple), and (C) 6 incongruent items carrying a wrong phoneme or letter in their written form (e.g. the spoken word [fɑʃəm], the written form <Fazam>, picture of cabbage). The pseudowords were presented in three different orders to counterbalance the order of presentation: WSC (Wrong letter, Silent letter, and Congruent letters), SWC and CSW.

<table>
<thead>
<tr>
<th>Written Label Types for the Incongruent/congruent items</th>
<th>Comment [ZF3]: Right? Only one group? Incongruent/congruent?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Comment [ZF4]: How many did we say in abstract. Please make it clear for me.</td>
<td></td>
</tr>
</tbody>
</table>

Table 1
<table>
<thead>
<tr>
<th>Written Label Type</th>
<th>Description</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Congruent (n=6)</td>
<td>Congruent with English spelling conventions</td>
<td>&lt;ramper&gt;, /ræmpər/;</td>
</tr>
<tr>
<td>Incongruent-Silent-Letter</td>
<td>The written words contain a &quot;silent&quot; letter; the spelled sequence &lt;nt&gt; mapped to /t/, &lt;lt&gt; mapped to /t/; &lt;db&gt; mapped to /b/, and &lt;sk&gt; mapped to /k/</td>
<td>&lt;butil&gt;, /b^ntIl/;</td>
</tr>
<tr>
<td>(n=6)</td>
<td></td>
<td>&lt;cobeet&gt;, /k^dbi:t/;</td>
</tr>
<tr>
<td>Incongruent-Wrong-Letter</td>
<td>The written forms contain a mismatch between a letter and phoneme; the letter &lt;ʃ&gt; mapped to /z/, &lt;v&gt; mapped to /l/, &lt;tf&gt; mapped to /d/, and &lt;ʃ&gt; mapped to /ʃ/, &lt;p&gt; mapped to /n/, &lt;t&gt; mapped to /z/</td>
<td>&lt;fazam&gt;, /faːʃəm/;</td>
</tr>
<tr>
<td>(n=6)</td>
<td></td>
<td>&lt;pooler&gt;, /puːvər/;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>&lt;bafel&gt;, /bæʃəl/;</td>
</tr>
</tbody>
</table>

2.2.2 Testing Phase

Two different tests were used: 1- criterion test and 2- meaning recall test which are briefly discussed below:

2.2.2.1. Criterion test

In order to see whether the participants learned 90% of the words they received during the study phase, they got the criterion test. If they were not able to achieve 90% accuracy, they needed to go through the study phase again. Each Picture in this test was presented two times: once with a matched name and once with a different name.

3.2.2.2. Meaning recall test

Meaning recall test was given to the participants to see if they were able to recall the meaning of words taught to them in the study phase. The test was an auditory word-picture matching test that was like the criterion test previously
mentioned in which participants judged a spoken word on the basis of its correct label in each picture. Seventeen pairs were mismatched, six of which were congruent spelling items where congruent words were paired with wrong pictures. New auditory stimuli were prepared for the remaining 12 mismatched items: there were auditory words representing the incongruent spelled forms presented during training in study phase (e.g., auditory [b^ntil] and [fazəm], see Table 2). They were paired with their corresponding pictures (e.g., auditory [b^ntil] with a picture of an apple) to form six mismatched incongruent-silent-letter items and six mismatched incongruent-extra-letter items.

Table 2

Example of Mismatched and Mismatched Listening Test Items

<table>
<thead>
<tr>
<th>Stimulus condition</th>
<th>Auditory word at test</th>
<th>Picture</th>
<th>Trained auditory word written form(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATCHED between picture and auditory label</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Congruent</td>
<td>[roudət]</td>
<td>Panda</td>
<td>[roudət] Rodat</td>
</tr>
<tr>
<td>MISMATCHED between picture and auditory label</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Congruent</td>
<td>[roudət]</td>
<td>Panda</td>
<td>[roudət] Rodat</td>
</tr>
<tr>
<td>Incongruent-Silent-letter</td>
<td>[b^ntil]</td>
<td>Apple</td>
<td>[b^ntil]</td>
</tr>
</tbody>
</table>
Incongruent-silent-letter pairs were predicted to be as difficult as the incongruent-wrong-letter pairs. As mentioned before, in both types of incongruent mismatched items, pictures were paired with labels that sounded similar to the written labels but different from the labels heard in the study phase.

2.3. Procedure

The participants received the study phase, criterion test and meaning recall test in the same order in a quiet room. The instructions appeared on the screen and participants heard the presented words through their headphones while the pictures indicating their meanings were being displayed on the computer screen. The Word Power point (2013) and the DMDX software were used for the presentation of materials in the study and testing phases respectively. In the testing phases, the participants were asked to determine if each picture matched the pseudoword they heard in the study phase by pressing the Right Shift button (if they totally matched) and the Left Shift button (if they did not match) on the computer keyboard.

3. Results

The following issues were considered in data analysis. RTs were measured from target offset in millisecond. Missing data ranged from 0 to 9 (20.15% of data for each item). One of the participants made more than 20% errors. Therefore she was replaced with another one. Regarding the items, learners made about 34.8% errors on item 128 and 47.8% errors on item 134. Therefore, these two items were discarded from further analysis. The discarded items were pooler and moler and it seems that the similarity of phonemes in their place of articulation and number of phonemes might have confused the participants when processing these items.

First, the results of data analysis regarding accuracy of responses and then those related to reaction times are presented. All analyses (accuracy and reaction times) were based on correct responses while incorrect responses were ignored. The paired samples \( t \) test was used to compare the performance of the participants on
each item type. The following table shows the descriptive statistics related to the items.

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>N</th>
<th>Std. Deviation</th>
<th>Std. Error Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pair 1 mismatched wrong letter</td>
<td>.7950</td>
<td>20</td>
<td>.18418</td>
<td>.04118</td>
</tr>
<tr>
<td>mismatched silent letter</td>
<td>.8200</td>
<td>20</td>
<td>.19358</td>
<td>.04329</td>
</tr>
</tbody>
</table>

Comparing the mean scores shows that participants were more accurate on silent letters. However, this difference is not statistically significant as the following table shows.

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Std. Error Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pair 1</td>
<td>mismatched wrong letter</td>
<td>-.025</td>
<td>.084</td>
</tr>
<tr>
<td>mismatched silent letter</td>
<td>-.13825</td>
<td>.08825</td>
<td>-.40</td>
</tr>
</tbody>
</table>

From the table, it can be concluded that the mean difference is not significant, \( t(19) = .46 \), \( p > .649 \). Next, RTs were compared.

The table shows that the mean scores are not very much different from each other.

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>N</th>
<th>Std. Deviation</th>
<th>Std. Error Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pair 1</td>
<td>mismatched wrong letter</td>
<td>2552</td>
<td>20</td>
<td>268.70483</td>
</tr>
<tr>
<td>mismatched silent letter</td>
<td>2542.2061</td>
<td>20</td>
<td>257.83000</td>
<td>57.65254</td>
</tr>
</tbody>
</table>

The \( t \) test run on the mean scores shows no significant difference between the means, indicating that both item types were processed at the same speed, \( t(19) = .251 \), \( p > .05 \).

**4. Discussion**
The aim of this study was to determine whether different types of grapheme–phoneme correspondence mismatches (e.g., adding a “silent” letter, and having a wrong letter) influenced learners’ memory of the phonological forms of words and their processing rates. To this end, 20 Persian speaking learners of English were given pseudowords to study and learn. For each item, the spoken form, the written form, and a picture showing its meaning were presented simultaneously. The items were of three types: one type based on regular English phoneme-grapheme correspondence, another type having a silent letter, and the third type having a wrong letter. The participants were later tested on their memory of the meaning of pseudowords in an auditory picture-matched test. Paired samples \( t \) tests were used to analyze the data. The results showed no significant difference between the performances on each type, neither for accuracy nor for processing time.

The results of the study are in contrast to Hayes-Harbs et al (2010), who found that orthographic representations can be part of the memory of the phonological forms of the words when the discrepancy involves a mismatch in a letter’s phonemic correspondent. This effect was observed only for wrong letter items and not silent letters. They attributed the lack of detrimental effect of silent letters to greater familiarity of native speakers with them. More research studies are required to shed light on this matter, as having a wrong letter is not unfamiliar to native speakers of English either. Hayes-Habs et al.’s study was conducted with native speakers of English, so the difference can be attributed to the participants. It seems that for Persian speakers learners of English both types are the same and neither can be different in any way from the other.

Attempting to show if the presentation of written form could affect the memory of the new words in L2 for speakers of Persian, a language with a different script from English, Masoumzadeh (2014) compared items with a silent letter and items with a wrong letter with congruent items separately. He found that performance on memory test for the phonological labels of pseudowords was slowed
down but no change was observed in terms of accuracy. He used the findings to conclude that second language learners whose first language has a different script do not use the written form accompanying the auditory label when learning new words.

On the basis of the findings, it seems that L2 learners do not pay a lot of attention to the spelling form of new words. One reason might be the limited capacity of working memory and the issue that simultaneous attention to both spoken and written forms is more demanding for L2 learners. Another reason can be lesser importance they give to spelling and priority they give to auditory labels as a clue to the meaning of new words.

References


Rachel Hayes-Harb (2010) Auditory Input Learning the Phonological Forms of New Words: Effects of Orthographic and *Language and Speech*


Global education is an international movement driven by increasingly globalized interactions in contemporary society. Many countries and international nongovernment organizations (NGOs) recognize global education as one of the most important components of education and promote corresponding policies. Despite the progress made in this field, proposed educational policies and curriculum development schemes are still in their infancy, making assessments of their implementation difficult to accomplish. Some countries have declared that their educational aims in a globalized, interdependent world are reflected in the national curricula.

Nevertheless, many important global issues remain neglected or inadequately addressed. Although many global educators highlight the relevance of global education to all curricular areas, little empirical evidence supports its importance. This gap raises questions regarding the extent to which global education components are reflected in national curricula. To address this gap, content analysis was conducted to examine the extent to which core concepts for global education are reflected in Taiwan’s Textbooks. The analyzed textbooks totaled 84 volumes from all of the learning areas for six grades in elementary school. The distributions of core concepts for global education in the title of unit, competence indicators, teaching goals, teaching activities and the content of texts in elementary school textbooks were analyzed.

A session was devoted to training three graduate students from an educational institute to code for two training datasets. Scott’s (1955) pi was used to calculate the inter-coder reliability for each pair coder. There are two major findings. On the part of the categories of global education concepts, the textbooks emphasize on the ecological sustainability, lacking the categories on human rights and justice. Within the seven learning areas, there are more global education concepts in the Social Study Learning Area and Integrative Activities Learning Area, while lacking for the concepts of global education in the Math Learning Area and English Learning Area.

Finally, according to research results, we propose suggestions for the educational authorities, textbook publishers, school teachers and researchers. We also hope that
this study elucidates the relationship between national curricula and global education, leading to new research that consolidates findings on revising textbooks for global education.

Keywords: textbook, content analysis, elementary school, global education.
Title: A Collaborative Approach to College Math Readiness

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Abstract

One of the major preparatory gap to achieving access and equity in higher education for low-income and under-represented students is the lack of preparation in math courses that would qualify these students for entrance into a college-level curriculum. Like other institutions of higher education the University of Hawaii (UH) has efforts to increase the math performance of high school and community college students. Because of the lack of preparation in math courses students are either denied admission or are required to complete additional non-college level courses prior to gaining access to college-level math and science courses. The lack of preparation in math leads to lower enrollments and less access to science, technology, engineering and math (STEM) majors. It also contributes to a higher number of students either leaving the campus or extending their college careers.

The preparatory gap in math courses is especially acute in the high schools that serve low-income and under-represented students. An additional factor is that many of these schools are rural and remote which does not allow for a direct contact for those schools with the resources available at the UH system campuses.

This case study documents the results of a pilot program to increase the number of students who qualify for college level math courses. The first objective was increase the pass rate of participants taking the COMPASS math test. The program offers access to online math curriculum along with using college students as mentors and tutors. The online math curriculum offers students a means to expand their knowledge of math concepts and math content. The
college students provide math tutoring to students when they need help with their homework or class assignments. The intent of the program is to provide additional math instruction to students both during and outside of their school time.

The participating students used the EdReady online system designed to allow participants to create a self-paced learning path for math content. After taking an adaptive assessment the system developed an individualized course of study that will help each student acquire additional skills and content knowledge according to their specific needs. In addition to using the online math content, participants utilized the services of UH students who provided tutoring/mentoring assistance for all project students using an online platform and using tutoring techniques developed by the AVID program. The content was made available 24 hours a day with the tutors available live online from 9 am to 10 pm Monday through Friday and 5pm to 10 pm on Sundays.

The pilot project identified potential participants from two groups:

1. Students who did not place into a college level math course after taking the COMPASS math placement examination.
2. Students planning to enroll at the community college in need of supplemental instruction prior to taking the COMPASS math placement examination.

These students were identified by the community college and recruited through the use of direct emails, announcements on websites, in-person presentation at new student orientation and advice from academic advisors.

The case study will document the key program components including:

1. Identification of student participants
2. Recruitment of student participants
3. Assessment of math skills and knowledge provided by EdReady
4. Development of individualized learning plan
5. Online Cyber-mentoring and math-tutoring provided by UH Manoa Online Learning Academy
6. Assessment of strategic partnerships among service providers
7. Results of program surveys

The case study will document the key resources within the pilot program including:

1. EdReady online assessment and planning
2. NROC staff support
3. OLA online cyber-mentors and tutors
4. Community College staff support
5. Program materials
6. OLA staff support
The key data elements for the case study include:

1. Data Sets from the Leeward Community College reports on developmental math
2. Data from the EdReady website including:
   a. Number of Logins: total number of times the student has logged into EdReady
   b. Last Login: the last date & time (provided in UTC time [Greenwich non-adjusted mean time]) the student logged into EdReady
   c. Time Spent Studying: the amount of time (n minutes) that the student spent in the online Resources provided by EdReady. This does not show the total time in the EdReady site or include time spent taking any Assessments (initial, pre- or re-tests).
   d. Score: the initial score after initial Assessment
   e. Score Gain: The difference between the student’s initial & current scores. If the student’s score has decreased since the Initial Assessment, the number here will be negative.
   f. Target Score: the score the student was working towards
   g. Reached Target: indicates if the student’s current EdReady score is greater than or equal to their Target Score.
Enhancing self-efficacy and interest in learning English of undergraduate students with low proficiency of English through participation in a collaborative learning programme

Self-efficacy and interest in learning English are two important factors influencing undergraduate students’ motivation in learning English. This exploratory study was designed to discover the perceived development of self-efficacy and interest of learning English through participation in a collaborative learning programme.

Five undergraduate students with low proficiency in English participated in the study. Focus group interviews were conducted after the completion of 12 tutoring classes of teaching experience. They were also asked to complete a pre and post-questionnaire on self-efficacy. The verbatim were transcribed and analysed using content analysis. Three themes were identified: increased some sources of self-efficacy in learning English, increased in self-efficacy in learning English, and gained interest in learning English. Quantitative data from pre- and post- mean scores on the language self-efficacy scale were collected. The mean increase in language self-efficacy score was 1.2, 95% CI = 0.027 to 2.13. Students had significantly increase in language self-efficacy scores (t = 3.57, df = 4, p = 0.02).

This study has important pedagogical implication. Collaborative learning programme might be an effective means in enhancing students' interest in learning English and becoming more self-efficacious in learning English.
An Experimental Investigation of Applying Cognitive Linguistics to Instructed L2 Learning

Abstract

For the past 20 years, the predominant linguistic paradigms have been based on abstract models that offered L2 researchers little in the way of useful, accessible presentations of grammar. Therefore, it is unsurprising that there has been a move away from attempts to apply theoretical models of language to second language instruction (Tyler, 2008). Cognitive linguistics, which is still a new discipline, is gaining recognition as a theoretical model that offers useful and accessible linguistic analyses to foreign language instruction. This paper reports on results of a study examining the efficacy of applying a cognitive linguistic approach to instructed L2 learning of various semantic issues. The findings obtained through three experiments provide support for the benefits of using cognitive linguistic analyses of the semantic issues even though the degree of efficacy in each experiment is varied. Furthermore, this paper talks about the necessity of development of pedagogical tools for applying this new linguistic approach successfully. As these experiments and other studies (Tyler, 2012) suggest, a cognitive linguistic based approach provides conceptual tools to address many aspects of language learning. However, its successful implementation depends heavily on careful preparation of teaching materials and on how much we can render its theoretical concepts accessible to learners.

1. Introduction

We basically draw on cognitive linguistic perspective toward languages as a theoretical model. This basic theoretical orientation rests on the idea that the mind and the body are not separate entities and we are likely to understand partially some abstract concepts by relating them cognitively to our own bodily experience (Gibbs, 2006). In the following we will discuss attempts to teach abstract linguistic issues: (i) (un)countability of nouns; (ii) polysemous senses of the verb *stand*; and (iii) English present perfect progressive. We will show that this method can yield certain positive results in each of these studies. The findings we gained through three experiments provide support for the benefits of using cognitive linguistic analyses of the semantic issues. All these attempts are based on the idea that learners can grasp meanings of linguistic forms through
their bodily and cognitive experience better than the conventional instruction in which no motivated nature of these issues is mentioned. As we will see soon below, all three experiments worked favorably for cognitive linguistic based instruction even though the degree of efficacy in each experiment was varied.

The organization of this paper is as follows. In the rest of this section, we will discuss some foundational assumptions of cognitive linguistics and its key concepts. In section two, we will talk about the research questions and three experiments. These experiments in turn are on countable/uncountable semantics, on polysemous verb *stand*, and finally on semantics of present perfect progressive. In section three, we will have a general discussion on implications we gain through these experiments. In section four, we will discuss how we can utilize our new perspective successfully into teaching and will conclude with discussing some remaining but important issues.

Although cognitive linguistics is a relatively new discipline, it is becoming influential. It embraces some closely related theories of language and they seem to be all based on the following two claims (e.g., Langacker, 1987; Radden & Dirven, 2007; Taylor, 2002; Tyler, 2012). First, unlike generative grammar, cognitive linguistics doesn’t assume a special-purpose language acquisition device. We don’t have to think of any form of special purpose device for language acquisition and learning. Therefore, the system of a language or grammar of a language is part of the humans’ general cognition. The cognitive processes which are involved in language use are also involved in other areas of cognitive activities. Second, language we use is a product of our interaction with the world. Linguistic knowledge is derived from language use. The language we encounter in our daily life is a source, from which we can infer form-meaning relationship. Real usages we encounter are the foundation of a language. In this sense language is usage-based.

Briefly we will introduce some basic key concepts to the extent necessary to understand the following discussion. The first key concept is “construal.” We use words to describe the world. However, the words we use for describing things and events never reflect a purely objective view of these objects and events. We see things through our perspective. Accordingly, the language we use reflects our perspective or certain ways of our viewing the world. Take rice and beans for example, rice is fine-grained and too fine to be counted, therefore, it is considered as mass noun or uncountable in English. Beans are large enough to be counted and consequently, they are countable in English. However, we need to remember this distinction reflects English speakers’ way of viewing these things. The second key concept is categorization. We will classify objects into a category. That is categorization. Categories are not clearly cut-off from each other. They have members that can be considered prototypical. And they also have peripheral members. Thirdly, the concept of embodiment comes into our view. Many people still believe that meaning is an abstract entity and it should be divorced from bodily experience. However, meanings of many words are grounded on our physical experience. For example, the phrase *look down on somebody* meaning *despise* is based on our experience of our bodily action. When somebody
despises another, he is most likely to take a stance of looking down on the person. And *stand out in math* is also an example of embodiment. If somebody is good at math, he is noticeable, therefore, he stands out. In this manner, many expressions are motivated by our bodily action.

### 2. Research questions and three experiments

#### 2.1 Research questions

We have two research questions. The first question is on whether a cognitive linguistic approach is applicable to teaching and learning English vocabulary or grammar. Grammar here means linguistic rules, covering syntactic, semantic, and phonological aspects of a language. The second question is how we can render cognitive linguistic concepts accessible to learners without assuming any prior knowledge. To respond to these questions, three experiments were conducted.

#### 2.2 First experiment: semantics of countable / uncountable nouns

The distinction between two classes of things, objects and substances are coded in English as count and mass nouns respectively. The first experiment is designed to answer how we can teach effectively the distinction using a cognitive linguistic approach. We can distinguish things on the basis of the following criteria in Table 1, which are shared by researchers in cognitive linguistics (Langacker, 1987; Radden & Dirven, 2007; Taylor, 2002 among others).

<table>
<thead>
<tr>
<th>Criteria for distinguishing countability / uncountability</th>
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<tbody>
<tr>
<td>(a) These things which meet these criteria are seen as solid objects (countable nouns).</td>
</tr>
<tr>
<td>i. Boundedness—things which are individuated</td>
</tr>
<tr>
<td>ii. Distinguishableness</td>
</tr>
<tr>
<td>iii. Countability—things which have inherent boundedness and limited partitionability</td>
</tr>
<tr>
<td>(b) These things which meet these criteria are seen as substances (uncountable nouns).</td>
</tr>
<tr>
<td>i. Unboundedness—things which are non-individuated</td>
</tr>
<tr>
<td>ii. Undistinguishableness</td>
</tr>
<tr>
<td>iii. Uncountability—things which have unlimited partitionability</td>
</tr>
</tbody>
</table>

#### 2.2.1 Procedure

The participants in this experiment consisted of 58 Japanese college students who majored in English literature and communication. They had not had any prior experience in English speaking countries for more than six months. Their English proficiency levels ranged from 450 to 600 on TOEIC test.

The participants were divided into two groups, each of which has roughly equal variance
of English proficiency in terms of TOEIC scores. Group 1, consisting of 29 subjects, was given a cognitive linguistic explanation of the issue using the cognitive diagrams (Figure 1 below) that depict the above criteria graphically. Group 2, consisting of 29 subjects, was offered a conventional explanation of the issue. Both groups were offered chances to see the real things such as rice, beans, gravel, pebbles, grass seed, and sunflower seeds, and of touching them. Neither group was given explicit instruction as to whether these things should be categorized as count or mass nouns.

Table 1 above shows distinction criteria according to which one can judge each entity should be classified either into mass or countable noun. Even though this table grasps the semantics of (un) countability precisely, its terminology is filled with elusive notions such as boundedness, distinguishableness, and individuated distinctiveness. Understanding all these terms clearly places some burden on learners. Therefore, we need to render these theoretical concepts and the framework accessible to them. The possible answer to this requirement is the following diagrams which function as a visual reminder of the notions involved in the distinction. These diagrams are compact, simple, straightforward but precise descriptions of the criteria. By seeing them, the subjects can easily grasp the elusive notions visually.

As for countable solid objects, an instructor may follow this procedure:

(i) Point to a group of objects and say “three cars.” ( ⇒ countability)
(ii) Point to a single object within a group, outline it and say “a car.”( ⇒ boundedness)
(iii) Coming down along the line to a single object, outline the object and say “a car.”

( ⇒ boundedness, distinguishableness)
(iv) Stopping at the lowest object, say “we can’t go further down.”

( ⇒ limited partitionability)
As for an instruction of uncountable substance, the instructor may follow this procedure:

(i) Start with the uppermost square of “milk.” Poke the square with the finger several times and say “milk, milk, milk” (⇒ unboundedness, undistinguishableness)

(ii) Come down to a lower square of “milk” and repeat the same gesture as above.
(⇒ unboundedness, undistinguishableness)

(iii) Go further down saying “milk, milk,…” (⇒ unlimited partitionability)

The whole instruction procedure covering both countable and uncountable cases took approximately 15 minutes. Therefore, it was not time-consuming and nor laborious both for the instructor and the subjects.

2.2.2 Test and results

After the stage above, the subjects of both G1 and G2 were requested to determine if a testing item with a noun is grammatical or not by judging the noun either as countable or uncountable. The experimental group (G1) was allowed to refer to the cognitive diagrams whenever it was necessary. Some samples of the test are shown in (1) below (for more details see Appendix A).

(1) Samples of the test items
   There are a lot of gravels in the box.
   There is a lot of rice in the bag.
   There is a lot of grass seed in this tray.

Table 2 shows the descriptive statistics for T-test between G1 and G2. The result shows G1 unequivocally outperformed G2 and that there is a statistically significant difference between G1 and G2 (t (56)=4.23, *p<.05). The cognitive linguistic based instruction worked favorably.

<table>
<thead>
<tr>
<th></th>
<th>M</th>
<th>SD</th>
<th>t</th>
<th>df</th>
<th>P</th>
</tr>
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<tbody>
<tr>
<td>G1</td>
<td>11.03</td>
<td>1.35</td>
<td>4.23</td>
<td>56</td>
<td>0.00087</td>
</tr>
<tr>
<td>G2</td>
<td>9.34</td>
<td>1.62</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2.3 Second experiment: semantic extension of polysemous verb take

This experiment was designed to measure the effectiveness of gestures to instruct various senses of polysemous word stand. Under the cognitive linguistic paradigm, it is a common understanding
that all of the senses of a polyseme are semantically motivated and form a network. In other words, various senses of a word tend to operate within radial categories with basic, prototypical senses lying towards the center, and figurative senses lying towards the periphery. Although semantic networks of prepositions such as over, in, on, etc. have been discussed in the previous literature (Beitel, Gibbs, & Sanders, 2001; Lakeoff, 1987; Tyler, 2012; Tyler & Evans, 2001, 2003 among others), senses of polysemous verbs have not been sufficiently discussed. It has been noted that non-native speakers tend to avoid figurative and peripheral usage of a word (Littlemore 2009). Based on my personal reflection, Japanese learners of English seem to be hesitant to use figurative usages of verbs and prefer to stick to more literal uses. The second experiment dealt with one of these polysemous verbs, namely, stand and discussed effectiveness of teaching of these senses in a cognitive linguistic based approach, in which gestures played a major role.

2.3.1 Procedure

The experiment started with a test at the outset (see Appendix B). 59 subjects (the same group of students in the experiment 1) were given the test to check their understanding of senses of 18 usages of the verb stand. These 18 usages were selected from Gibbs, Beitel, Harrington and Sanders (1994). See the procedure below:

(i) 59 subjects were given a test to check how many different senses of stand they knew out of 18.
(ii) A set of gestures for each sense based on image schema profile was shown twice to the subjects.
(iii) The subjects did a reetrial of the same test and were requested to write a brief comment.
(iv) The difference between the first and second trial was measured.

After answering the test with 18 different senses of stand as for the first trial, all the subjects saw gesture-like presentations of each usage twice. It took approximately 25 minutes for the subjects to see the whole gesture performance covering 18 usages. Each set of gestures corresponds to each usage of stand. The important thing is that these bodily actions are based on image schema profiles which had been found out experimentally by Gibbs, Beitel, Harrington and Sanders (1994). Through a series of experiments they concluded that these five image schemas were involved in all senses of stand. These five image schemas are “balance,” “verticality,” “center-periphery,” “resistance,” and “linkage.” To give an example, the phrase stand out in several sports is related to the image schema profile <CP-V-L-B-R> in this order of importance, and the phrase the boss always stands over me to <V-CP-L-R-B> (V: verticality, CP: center—periphery, R: resistance, B: balance, L: linkage, for more details about image schema profiles see Gibbs, Beitel, Harrington and Sanders, 1994)
2.3.2. Gestures representing the image schema profile

These gestures were actually performed by three teaching assistants (graduate school students) and the real pictures should be displayed as an illustration of what they did but here instead two illustrations are presented (avoiding infringing on the portrait right).

![Figure 2. Illustration of gestures](image)

The left-hand picture illustrates the phrase *stand out in several sports*, and the second one *the boss always stands over me*. In the contemporary gesture literature, there is a general consensus that gesture and speech express closely related meanings. Although the precise relationship between the modalities is not straightforward, there is good reason to consider gestures, language, and speech as a closely-knit system (Gullberg, de Bot, and Volterra, 2010). If gestures and speech are regarded as an integrated system, it may be a case that factors that play a role in deciphering gestures also play a role in understanding a language.

All language use involves two types of knowledge, declarative and procedural ones. The former is knowledge of a fact, such as “to form a progressive sentence, use *be verb + ~ing construction*,” while procedural knowledge is bound up with actions such as “drive a car.” If we apply this distinction to learning a verb meaning, we can claim that learning through the definition of a word on a dictionary is closely related to declarative knowledge acquisition. On the contrary, if a learner can grasp the meaning of a verb by simply observing the corresponding action and/or performing it themselves, its learning process is closely related to procedural knowledge, which, interestingly, means that a learner may get to procedural knowledge directly skipping the preliminary step of declarative knowledge through gesture viewing or performing.

2.3.3. The result of experiment 2

The difference between the first and the second trial of the test is measured for each usage in table 2 below. “Usage number” in the first column corresponds to each usage of *stand*, for
example, the usage number 1 corresponds to “let the mixture stand.” We gave the subjects two trials using the same test. We classified subjects’ answering patterns into four cases. Pattern 1 represents a case where subject’s first answer is correct. Pattern 2 represents a case where subject’s first answer is correct but the second wrong. Pattern 3 actually covers two sub-cases where a subject, starting with wrong or no answer, ends with correct answer. Pattern 4 also represents multiple sub-cases either where a subject, starting with wrong answer, ends with a failure, or where a subject, starting with wrong answer, ends with wrong again or no entry. Pattern 3 definitely represents a successful pattern in which the gesture instruction helped the subjects to infer the meaning of phrase. Pattern 4, to the contrary, stands for a case where the gesture instruction didn’t work and a subject was not able to reach the correct understanding of the phrase.

Table 2

Results: two trials of the test of “stand”

<table>
<thead>
<tr>
<th>usage no.</th>
<th>Pattern 1</th>
<th>Pattern 2</th>
<th>Pattern 3</th>
<th>Pattern 4</th>
<th>Pattern 3</th>
<th>Pattern 4</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>correct-✔</td>
<td>cor-wrong</td>
<td>wrong-cor.</td>
<td>wrong-wrong/x</td>
<td>x-cor.</td>
<td>x-wrong/x</td>
</tr>
<tr>
<td>1</td>
<td>0</td>
<td>1</td>
<td>10</td>
<td>48</td>
<td>59</td>
<td>*71.74</td>
</tr>
<tr>
<td>2</td>
<td>12</td>
<td>1</td>
<td>33</td>
<td>13</td>
<td>59</td>
<td>*71.74</td>
</tr>
<tr>
<td>3</td>
<td>1</td>
<td>0</td>
<td>43</td>
<td>15</td>
<td>59</td>
<td>*74.14</td>
</tr>
<tr>
<td>4</td>
<td>0</td>
<td>0</td>
<td>18</td>
<td>41</td>
<td>59</td>
<td>30.51</td>
</tr>
<tr>
<td>5</td>
<td>4</td>
<td>1</td>
<td>14</td>
<td>40</td>
<td>59</td>
<td>25.93</td>
</tr>
<tr>
<td>6</td>
<td>2</td>
<td>0</td>
<td>42</td>
<td>15</td>
<td>59</td>
<td>*73.68</td>
</tr>
<tr>
<td>7</td>
<td>2</td>
<td>0</td>
<td>16</td>
<td>41</td>
<td>59</td>
<td>28.07</td>
</tr>
<tr>
<td>8</td>
<td>11</td>
<td>0</td>
<td>22</td>
<td>26</td>
<td>59</td>
<td>45.83</td>
</tr>
<tr>
<td>9</td>
<td>1</td>
<td>1</td>
<td>8</td>
<td>49</td>
<td>59</td>
<td>14.04</td>
</tr>
<tr>
<td>10</td>
<td>5</td>
<td>0</td>
<td>38</td>
<td>16</td>
<td>59</td>
<td>*70.37</td>
</tr>
<tr>
<td>11</td>
<td>1</td>
<td>0</td>
<td>41</td>
<td>17</td>
<td>59</td>
<td>*70.69</td>
</tr>
<tr>
<td>12</td>
<td>3</td>
<td>1</td>
<td>37</td>
<td>18</td>
<td>59</td>
<td>*67.27</td>
</tr>
<tr>
<td>13</td>
<td>12</td>
<td>0</td>
<td>38</td>
<td>9</td>
<td>59</td>
<td>*80.85</td>
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<tr>
<td>14</td>
<td>4</td>
<td>0</td>
<td>28</td>
<td>27</td>
<td>59</td>
<td>*50.91</td>
</tr>
<tr>
<td>15</td>
<td>2</td>
<td>0</td>
<td>28</td>
<td>29</td>
<td>59</td>
<td>49.12</td>
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<tr>
<td>16</td>
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<td>0</td>
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<td>36</td>
<td>59</td>
<td>38.98</td>
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<tr>
<td>17</td>
<td>2</td>
<td>0</td>
<td>29</td>
<td>28</td>
<td>59</td>
<td>*50.88</td>
</tr>
<tr>
<td>18</td>
<td>2</td>
<td>0</td>
<td>48</td>
<td>9</td>
<td>59</td>
<td>*84.21</td>
</tr>
</tbody>
</table>

The last two columns of validity and invalidity correspond to the percentage of correct answers.
and wrong answers after seeing the gestures respectively. This table shows that the gesture instructions helped the subjects to understand some usages (indicated by *) while they didn’t work much for the rest (indicated by #). Although the valid cases slightly outnumber the invalid cases, we need to consider what factors lie between these valid and invalid groups of usages. Before we analyze that important topic, we will see some of the comments from our subjects who took part in the experiment. The participants of the experiment were asked to respond to an open-ended questionnaire which was designed to solicit their introspective comments on this instruction. Among 59 comments, 47 of them (79.7%) were positive feedback to this new method, while 12 comments (20.3%) were rather critical of it. See some representative examples:

Student A: “Some senses which I didn’t know at first just popped into my mind when I saw the gestures…”

Student B: “Phrasal verbs are always troublesome, but this is a good rescue from mere memorization of them…”

Student C: “This method works as long as concrete examples are concerned but the meanings of more figurative or peripheral usages are beyond this direct method, which, after all, is based on direct experience by observing the performances.

Students A, B talked about the advantageous aspects of the method, particularly A’s comment “senses popped into my mind” may imply that the knowledge he acquired through deciphering gestures had been organized into a procedural type of knowledge. However, student C’s comment summarizes the limits of the present idea clearly. These invalid cases (indicated by # in Table 2) are all concerned with figurative usages of *stand* while these valid cases (*) are connected with more or less prima-facie examples whose senses are easily inferable or transparent. Learners can grasp senses of phrasal expressions by observing the gestures and inferring the messages as long as they are inferable, otherwise they need further description which helps them follow a metaphorical extension path from a transparent usage to more peripheral one. Meanings of phrasal verbs cannot be exhausted just by image schemas. More factors must be involved. Further survey of this issue is strongly suggested.

2. 4 Experiment 3: semantics of English present perfect progressive

Experiment 3 was on semantics of present perfect progressive, which many of Japanese learners of English tend to consider difficult. This time, 59 subjects (the same group of participants as in the previous two experiments) were tested their understanding of the meaning of present perfect progressive. When we hear a sentence like “my father has been washing his car
since this morning,” we naturally infer that the washing action is still going on. However, a sentence like “I’ve been running” responding to a question “why are looking so tired?” doesn’t entail that running is still going on. The running process must have been ceased. This observation suggests that we have to assume two types of present perfect progressive. However, some grammar books published in Japan take continuation of process as a necessary condition and even claim that the lack of it renders the sentence ungrammatical. Therefore, learners feel puzzled when they come across some examples which obviously violate the rule which they assume to be true. This experiment was designed to respond to this elusive semantic issue and also to measure the effectiveness of applying cognitive linguistic insight to learning semantics of present perfect progressive.

2.4.1 Procedure

See the procedure of this last experiment:

(i) 59 subjects were divided into the experimental group G1 (n=29), and the control group G2 (n=30).
(ii) Only G1 was given cognitive linguistic explanation of the meaning of present perfect progressive using animated pictures. G2 was offered a conventional explanation.
(iii) Both groups took the same test.
(iv) The difference between two groups was measured statistically and analyzed.

2.4.2 Cognitive linguistic explanation of present perfect progressive

According to Langacker (2001) and Radden & Dirvfen (2007), the meaning of present perfect progressive is compositional, i.e., a combination of that of progressive and that of present perfect. First, the progressive functions for putting the end point of an action out of focus and puts focus on the durational phase. Second, present perfect functions for placing the event into the indefinite past. It also requires us to search for current relevance. The current relevance can be either a continuative state or a resultative state. This explanation is summarized in (2).

(2) Compositional analysis of present perfect progressive
(i) Progressive focuses on durational phase of an activity and puts the end-point out of focus.
(ii) Present perfect focuses on the present time and puts the event into indefinite past time.
(iii) Present perfect requires an interpreter to search for current relevance of the past event to the present time. Current relevance may be either the continuation of the activity to the present moment or a resultative state which is caused by the activity.

( Langacker, 2001 ; Radden & Dirvfen, 2007 )

The above elucidation captures semantics of present perfect progressive precisely and compactly
but still is not utilizable when one has to consider an aspectual feature of a sentence containing present perfect progressive. We need to translate the above criteria into more accessible description. A possible solution is displaying an animation which shows the compositional feature of the construction deftly, clearly and memorably. *Figure 3* with 3 pictures below was in fact a set of movable pictures with animation effects, which appeared in this order when it was displayed to the subjects.

![Figure 3](image-url)

*Figure 3  Compositional illustration of present perfect progressive*

This animation was shown three time to G1. The subjects in G1, who saw the animation, were instructed both to imitate “teaching gestures” (i.e., gestures used deliberately by a teacher to help his students) and to repeat vocal instructions simultaneously after the teacher, which were abbreviated statements similar to (2) above: “focus on the durational phase,” “put the end point out of focus,” “put the event back into indefinite past,” “search for current relevance,” and “current relevance can be either continuative state or resultative state.” This was conducted with an expectation of positive effects produced by combination of visual, vocal, and gestural modalities. After this stage all the subjects took the test, which asked them to judge each sentence with present perfect progressive as a case of (i) continuative action; or (ii) ceased action with a resultative state; or (iii) both interpretation possible.

### 2.4.3 Result of the test

Table 3 shows the descriptive statistics for T-test between G1 and G2. The result shows G1 modestly outperformed G2 and that there is a statistically significant difference between G1 and G2 ($t (57)=2.77, * p< .05$). Therefore, the cognitive linguistics based instruction worked favorably.
3. Discussion

We saw the outline of three experiments above. In this section we will consider the results of three experiments and the implications. All three experiments, particularly experiment 1 and 3, have shown favorable results for cognitive linguistics based instruction even though the degree of efficacy in each experiment is varied. Therefore, we can safely say that cognitive linguistics based instruction is beneficial to learners as far as linguistic items that we dealt with in these experiments are concerned. As for experiment 1, showing the cognitive linguistic diagrams illustrating visually the distinction between countable and mass nouns was beneficial and functional. As for experiment 3, the animation illustrating the compositional feature of English present perfect progressive was helpful. Teaching instruments such as the cognitive linguistic diagrams, and the animation were used to translate complicated concepts into directly perceivable and accessible to subjects without prior knowledge of cognitive linguistics.

Experiment 2 showed that using content-loaded, representational gestures to help subjects to infer polysemous senses of verbal phrases with stand was of limited efficacy. Even though there is considerable evidence that gestures affect perception and interpretation of language, their effects are still auxiliary particularly when used to show more figurative expression like “to get stood up for a date.” In order to make gestures more beneficial in teaching polysemous senses of this kind, we need to consider a combination of a cognitive diagram which helps learners to trace a metaphorical extension pathway with representational gestures.

4. Conclusion

We have two research questions. The first question is on whether a cognitive linguistic approach is applicable to teaching and learning English. The second question is how we can render cognitive linguistic concepts accessible to learners without assuming any prior knowledge. As an answer to the first question we can say that cognitive linguistic based approach is beneficial. However, at this present stage we cannot determine in what linguistic fields cognitive linguistics based instruction is effective and beneficial. I think it is simplistic to assume that all the findings in cognitive linguistics are applicable to teaching English. Cognitive linguistics assumes that a language is usage-based and that many aspects of language are grounded on embodied experience.

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<tr>
<th></th>
<th>M</th>
<th>SD</th>
<th>t</th>
<th>df</th>
<th>P</th>
<th>Significant at p &lt;.05</th>
</tr>
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<tbody>
<tr>
<td>G1 (n=29)</td>
<td>11.03</td>
<td>2.48</td>
<td>2.77</td>
<td>57</td>
<td>0.0076</td>
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<tr>
<td>G2 (n=30)</td>
<td>9.34</td>
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However, these tenets do not mean that cognitive linguistics is simple in its structure. To the contrary, cognitive linguistics is structurally-complex in its own right with a lot of sophisticated theory-internal concepts, which in turn requires teachers who desire to apply it to their teaching to concentrate on learning them over a prolonged period. At this stage we must confine ourselves to say that we need to have a lot more of further experimental evidence to show what linguistic aspects cognitive linguistics based instruction is favorably compatible with.

In relation to the second question, one condition we should remember here in applying cognitive linguistics based instruction to our teaching is that we should devise well designed, diagrams, gestures or animation which may represent notions and concepts of cognitive linguistics concerned concisely, precisely and clearly. Introducing jargons or technical terms from cognitive linguistics into a classroom seems to confuse our students.

Notes

1. Participants in these three experiments were from the same class. The total number was 59. These experiments were conducted on three different days with a week interval in July, 2012.
2. Original comments were written in Japanese. The author translated into English for this paper.

Acknowledgement

This research was partially supported by the Ministry of Education, Science, Sports and Culture Grant-in-Aid for Science Research (C), No. 21520612.

References


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Appendices

Appendix A: Test for experiment 1

1. There are a lot of gravels in the box.
2. There is a lot of gravel in the box.
3. There are a lot of rices in the bag.
4. There is a lot of rice in the bag.
5. There are a lot of beans in the bag.
6. There is a lot of bean in the box.
7. There are a lot of pebbles in the box.
8. There is a lot of pebble in the box.
9. There are a lot of sunflower seeds in this tray.
10. There is a lot of sunflower seed in this tray.
11. There are a lot of grass seeds in this tray.
12. There is a lot of grass seed in this tray.

Appendix B: various usages of stand

1. to let the mixture stand
2. the police told them to stand back
3. to stand at attention
4. to let the issue stand
(5) to stand out in several sports
(6) the boss always stands over me
(7) stand the test of time
(8) won’t stand for such treatment
(9) to stand in someone else’s shoes
(10) we stand on 30 years experience
(11) to stand on shaky ground
(12) to stand by your man
(13) to stand against great odds
(14) they did nothing but stand around
(15) it stands to reason
(16) to get stood up for a date
(17) to stand to profit
(18) to stand in the way

Appendix C: Test materials for semantics of present perfect progressive

Question 1 Read the following and classify each of which as case (i): where its process is still going on at this present moment; or case (ii): where its process has been ceased leaving current relevance to the present time; or case (iii): where both cases above are possible.

(1) You’ve been fighting again. I can tell that from your black eye.
(2) He has been fighting for an hour on the ring.
(3) John has been fighting.
(4) It’s been snowing. Look. The ground is white.
(5) It’s been snowing since this morning.
(6) It’s been snowing.
(7) Have you been crying? Your eyes are red.
(8) Kyoko has been crying for 2 hours.
(9) You have been practicing the violin. I can tell this from your violin bruise.
(10) I have been working all day.
(11) He has been trying to get Sally on the phone. But his attempts are all in vain.
(12) Somebody has been sitting in my chair. And it is broken!
(13) Somebody has been eating my soup and the bowl is empty.
(14) A: Why are you looking tired? B: I’ve been running.
(15) A: What have you been up to? B: I’ve been reading this book since this morning.

Question 2 Explain the difference in acceptability of (a) and (b).

(a) ? My father has been washing his car and now he is in the living room drinking coffee.
(b) My father has been washing his car and his clothes are still wet.
An Experimental Investigation of Applying Cognitive Linguistics to Instructed L2 Learning

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Kinki University

Abstract

For the past 20 years, the predominant linguistic paradigms have been based on abstract models that offered L2 researchers little in the way of useful, accessible presentations of grammar. Therefore, it is unsurprising that there has been a move away from attempts to apply theoretical models of language to second language instruction (Tyler, 2008). Cognitive linguistics, which is still a new discipline, is gaining recognition as a theoretical model that offers useful and accessible linguistic analyses to foreign language instruction. This paper reports on results of a study examining the efficacy of applying a cognitive linguistic approach to instructed L2 learning of various semantic issues. The findings obtained through three experiments provide support for the benefits of using cognitive linguistic analyses of the semantic issues even though the degree of efficacy in each experiment is varied. Furthermore, this paper talks about the necessity of development of pedagogical tools for applying this new linguistic approach successfully. As these experiments and other studies (Tyler, 2012) suggest, a cognitive linguistic based approach provides conceptual tools to address many aspects of language learning. However, its successful implementation depends heavily on careful preparation of teaching materials and on how much we can render its theoretical concepts accessible to learners.

1. Introduction

We basically draw on cognitive linguistic perspective toward languages as a theoretical model. This basic theoretical orientation rests on the idea that the mind and the body are not separate entities and we are likely to understand partially some abstract concepts by relating them cognitively to our own bodily experience (Gibbs, 2006). In the following we will discuss attempts to teach abstract linguistic issues: (i) (un) countability of nouns; (ii) polysemous senses of the verb *stand*; and (iii) English present perfect progressive. We will show that this method can yield certain positive results in each of these studies. The findings we gained through three experiments provide support for the benefits of using cognitive linguistic analyses of the semantic issues. All these attempts are based on the idea that learners can grasp meanings of linguistic forms through
their bodily and cognitive experience better than the conventional instruction in which no motivated nature of these issues is mentioned. As we will see soon below, all three experiments worked favorably for cognitive linguistic based instruction even though the degree of efficacy in each experiment was varied.

The organization of this paper is as follows. In the rest of this section, we will discuss some foundational assumptions of cognitive linguistics and its key concepts. In section two, we will talk about the research questions and three experiments. These experiments in turn are on countable/uncountable semantics, on polysemous verb stand, and finally on semantics of present perfect progressive. In section three, we will have a general discussion on implications we gain through these experiments. In section four, we will discuss how we can utilize our new perspective successfully into teaching and will conclude with discussing some remaining but important issues.

Although cognitive linguistics is a relatively new discipline, it is becoming influential. It embraces some closely related theories of language and they seem to be all based on the following two claims (e.g., Langacker, 1987; Radden & Dirven, 2007; Taylor, 2002; Tyler, 2012). First, unlike generative grammar, cognitive linguistics doesn’t assume a special-purpose language acquisition device. We don’t have to think of any form of special purpose device for language acquisition and learning. Therefore, the system of a language or grammar of a language is part of the humans’ general cognition. The cognitive processes which are involved in language use are also involved in other areas of cognitive activities. Second, language we use is a product of our interaction with the world. Linguistic knowledge is derived from language use. The language we encounter in our daily life is a source, from which we can infer form-meaning relationship. Real usages we encounter are the foundation of a language. In this sense language is usage-based.

Briefly we will introduce some basic key concepts to the extent necessary to understand the following discussion. The first key concept is “construal.” We use words to describe the world. However, the words we use for describing things and events never reflect a purely objective view of these objects and events. We see things through our perspective. Accordingly, the language we use reflects our perspective or certain ways of our viewing the world. Take rice and beans for example, rice is fine-grained and too fine to be counted, therefore, it is considered as mass noun or uncountable in English. Beans are large enough to be counted and consequently, they are countable in English. However, we need to remember this distinction reflects English speakers’ way of viewing these things. The second key concept is categorization. We will classify objects into a category. That is categorization. Categories are not clearly cut-off from each other. They have members that can be considered prototypical. And they also have peripheral members. Thirdly, the concept of embodiment comes into our view. Many people still believe that meaning is an abstract entity and it should be divorced from bodily experience. However, meanings of many words are grounded on our physical experience. For example, the phrase look down on somebody meaning despise is based on our experience of our bodily action. When somebody
despises another, he is most likely to take a stance of looking down on the person. And *stand out in math* is also an example of embodiment. If somebody is good at math, he is noticeable, therefore, he stands out. In this manner, many expressions are motivated by our bodily action.

### 2. Research questions and three experiments

#### 2.1 Research questions

We have two research questions. The first question is on whether a cognitive linguistic approach is applicable to teaching and learning English vocabulary or grammar. Grammar here means linguistic rules, covering syntactic, semantic, and phonological aspects of a language. The second question is how we can render cognitive linguistic concepts accessible to learners without assuming any prior knowledge. To respond to these questions, three experiments were conducted.

#### 2.2 First experiment: semantics of countable / uncountable nouns

The distinction between two classes of things, objects and substances are coded in English as count and mass nouns respectively. The first experiment is designed to answer how we can teach effectively the distinction using a cognitive linguistic approach. We can distinguish things on the basis of the following criteria in Table 1, which are shared by researchers in cognitive linguistics (Langacker, 1987; Radden & Dirven, 2007; Taylor, 2002 among others).

**Table 1**

<table>
<thead>
<tr>
<th>Criteria for distinguishing countability / uncoutability</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) These things which meet these criteria are seen as solid objects (countable nouns).</td>
</tr>
<tr>
<td>i. Boundedness—things which are individuated</td>
</tr>
<tr>
<td>ii. Distinguishableness</td>
</tr>
<tr>
<td>iii. Countability—things which have inherent boundedness and limited partitionability</td>
</tr>
<tr>
<td>(b) These things which meet these criteria are seen as substances (uncountable nouns).</td>
</tr>
<tr>
<td>i. Unboundedness—things which are non-individuated</td>
</tr>
<tr>
<td>ii. Undistinguishableness</td>
</tr>
<tr>
<td>iii. Uncountability—things which have unlimited partitionability</td>
</tr>
</tbody>
</table>

#### 2.2.1 Procedure

The participants in this experiment consisted of 58 Japanese college students who majored in English literature and communication. They had not had any prior experience in English speaking countries for more than six months. Their English proficiency levels ranged from 450 to 600 on TOEIC test.

The participants were divided into two groups, each of which has roughly equal variance
of English proficiency in terms of TOEIC scores. Group 1, consisting of 29 subjects, was given a cognitive linguistic explanation of the issue using the cognitive diagrams (Figure 1 below) that depict the above criteria graphically. Group 2, consisting of 29 subjects, was offered a conventional explanation of the issue. Both groups were offered chances to see the real things such as rice, beans, gravel, pebbles, grass seed, and sunflower seeds, and of touching them. Neither group was given explicit instruction as to whether these things should be categorized as count or mass nouns.

Table 1 above shows distinction criteria according to which one can judge each entity should be classified either into mass or countable noun. Even though this table grasps the semantics of (un) countability precisely, its terminology is filled with elusive notions such as boundedness, distinguishableness, and individuated distinctiveness. Understanding all these terms clearly places some burden on learners. Therefore, we need to render these theoretical concepts and the framework accessible to them. The possible answer to this requirement is the following diagrams which function as a visual reminder of the notions involved in the distinction. These diagrams are compact, simple, straightforward but precise descriptions of the criteria. By seeing them, the subjects can easily grasp the elusive notions visually.

As for countable solid objects, an instructor may follow this procedure:
(i) Point to a group of objects and say “three cars.” (⇒ countability)
(ii) Point to a single object within a group, outline it and say “a car.” (⇒boundedness)
(iii) Coming down along the line to a single object, outline the object and say “a car.”
  (⇒ boundedness, distinguishableness)
(iv) Stopping at the lowest object, say “we can’t go further down.”
  (⇒ limited partitionability)
As for an instruction of uncountable substance, the instructor may follow this procedure:

(i) Start with the uppermost square of “milk.” Poke the square with the finger several times and say “milk, milk, milk  (⇒ unboundedness, undistinguishableness)
(ii) Come down to a lower square of “milk” and the repeat the same gesture as above.  (⇒ unboundedness, undistinguishableness)
(iii) Go further down saying “milk, milk,…” (⇒ unlimited partitionability)

The whole instruction procedure covering both countable and uncountable cases took approximately 15 minutes. Therefore, it was not time-consuming and nor laborious both for the instructor and the subjects.

2.2.2 Test and results

After the stage above, the subjects of both G1 and G2 were requested to determine if a testing item with a noun is grammatical or not by judging the noun either as countable or uncountable. The experimental group (G1) was allowed to refer to the cognitive diagrams whenever it was necessary. Some samples of the test are shown in (1) below (for more details see Appendix A).

(1) Samples of the test items
    There are a lot of gravels in the box.
    There is a lot of rice in the bag.
    There is a lot of grass seed in this tray.

Table 2 shows the descriptive statistics for T-test between G1 and G2. The result shows G1 unequivocally outperformed G2 and that there is a statistically significant difference between G1 and G2 (t (56)=4.23,* p< .05). The cognitive linguistic based instruction worked favorably.

Table 2
Descriptive Statistics of Difference between G1 and G2

<table>
<thead>
<tr>
<th></th>
<th>M</th>
<th>SD</th>
<th>t</th>
<th>df</th>
<th>P</th>
<th>Significant at p &lt;.05</th>
</tr>
</thead>
<tbody>
<tr>
<td>G1 (n=29)</td>
<td>11.03</td>
<td>1.35</td>
<td>4.23</td>
<td>56</td>
<td>0.00087</td>
<td>Significant at p &lt;.05</td>
</tr>
<tr>
<td>G2 (n=29)</td>
<td>9.34</td>
<td>1.62</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2.3 Second experiment: semantic extension of polyseous verb take

This experiment was designed to measure the effectiveness of gestures to instruct various senses of polyseous word stand. Under the cognitive linguistic paradigm, it is a common understanding
that all of the senses of a polyseme are semantically motivated and form a network. In other words, various senses of a word tend to operate within radial categories with basic, prototypical senses lying towards the center, and figurative senses lying towards the periphery. Although semantic networks of prepositions such as over, in, on, etc. have been discussed in the previous literature (Beitel, Gibbs, & Sanders, 2001; Lakeoff, 1987; Tyler, 2012; Tyler & Evans, 2001, 2003 among others), senses of polysemous verbs have not been sufficiently discussed. It has been noted that non-native speakers tend to avoid figurative and peripheral usage of a word (Littlemore 2009). Based on my personal reflection, Japanese learners of English seem to be hesitant to use figurative usages of verbs and prefer to stick to more literal uses. The second experiment dealt with one of these polysemous verbs, namely, stand and discussed effectiveness of teaching of these senses in a cognitive linguistic based approach, in which gestures played a major role.

2.3.1 Procedure

The experiment started with a test at the outset (see Appendix B). 59 subjects (the same group of students in the experiment 1) were given the test to check their understanding of senses of 18 usages of the verb stand. These 18 usages were selected from Gibbs, Beitel, Harrington and Sanders (1994). See the procedure below:

(i) 59 subjects were given a test to check how many different senses of stand they knew out of 18.
(ii) A set of gestures for each sense based on image schema profile was shown twice to the subjects.
(iii) The subjects did a retrial of the same test and were requested to write a brief comment.
(iv) The difference between the first and second trial was measured.

After answering the test with 18 different senses of stand as for the first trial, all the subjects saw gesture - like presentations of each usage twice. It took approximately 25 minutes for the subjects to see the whole gesture performance covering 18 usages. Each set of gestures corresponds to each usage of stand. The important thing is that these bodily actions are based on image schema profiles which had been found out experimentally by Gibbs, Beitel, Harrington and Sanders (1994). Through a series of experiments they concluded that these five image schemas were involved in all senses of stand. These five image schemas are “balance,” “verticality,” “center-periphery,” “resistance,” and “linkage.” To give an example, the phrase stand out in several sports is related to the image schema profile <CP-V-L-B-R> in this order of importance, and the phrase the boss always stands over me to <V-CP-L-R-B> (V: verticality, CP: center–periphery, R: resistance, B: balance, L: linkage, for more details about image schema profiles see Gibbs, Beitel, Harrington and Sanders , 1994)
2.3.2. Gestures representing the image schema profile

These gestures were actually performed by three teaching assistants (graduate school students) and the real pictures should be displayed as an illustration of what they did but here instead two illustrations are presented (avoiding infringing on the portrait right).

![Illustration of gestures]

*Figure 2. Illustration of gestures*

The left-hand picture illustrates the phrase *stand out in several sports*, and the second one *the boss always stands over me*. In the contemporary gesture literature, there is a general consensus that gesture and speech express closely related meanings. Although the precise relationship between the modalities is not straightforward, there is good reason to consider gestures, language, and speech as a closely-knit system (Gullberg, de Bot, and Volterra, 2010). If gestures and speech are regarded as an integrated system, it may be a case that factors that play a role in deciphering gestures also play a role in understanding a language.

All language use involves two types of knowledge, declarative and procedural ones. The former is knowledge of a fact, such as “to form a progressive sentence, use *be verb + ~ing construction*,” while procedural knowledge is bound up with actions such as “drive a car.” If we apply this distinction to learning a verb meaning, we can claim that learning through the definition of a word on a dictionary is closely related to declarative knowledge acquisition. On the contrary, if a learner can grasp the meaning of a verb by simply observing the corresponding action and/or performing it themselves, its learning process is closely related to procedural knowledge, which, interestingly, means that a learner may get to procedural knowledge directly skipping the preliminary step of declarative knowledge through gesture viewing or performing.

2.3.3. The result of experiment 2

The difference between the first and the second trial of the test is measured for each usage in table 2 below. “Usage number” in the first column corresponds to each usage of *stand*, for
example, the usage number 1 corresponds to “let the mixture stand.” We gave the subjects two trials using the same test. We classified subjects’ answering patterns into four cases. Pattern 1 represents a case where subject’s first answer is correct. Pattern 2 represents a case where subject’s first answer is correct but the second wrong. Pattern 3 actually covers two sub-cases where a subject, starting with wrong or no answer, ends with correct answer. Pattern 4 also represents multiple sub-cases either where a subject, starting with wrong answer, ends with a failure, or where a subject, starting with wrong answer, ends with wrong again or no entry. Pattern 3 definitely represents a successful pattern in which the gesture instruction helped the subjects to infer the meaning of phrase. Pattern 4, to the contrary, stands for a case where the gesture instruction didn’t work and a subject was not able to reach the correct understanding of the phrase.

Table 2

Results: two trials of the test of “stand”

<table>
<thead>
<tr>
<th>usage no.</th>
<th>Pattern 1 correct- ✓</th>
<th>Pattern 2 cor-wrong</th>
<th>Pattern 3 wrong-cor. x-cor.</th>
<th>Pattern 4 wrong-wrong/x x-wrong/x</th>
<th>Validity</th>
<th>Invalidity</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0</td>
<td>1</td>
<td>10</td>
<td>48</td>
<td>59</td>
<td>17.24 #82.76</td>
</tr>
<tr>
<td>2</td>
<td>12</td>
<td>1</td>
<td>33</td>
<td>13</td>
<td>59</td>
<td>*71.74 28.26</td>
</tr>
<tr>
<td>3</td>
<td>1</td>
<td>0</td>
<td>43</td>
<td>15</td>
<td>59</td>
<td>*74.14 25.86</td>
</tr>
<tr>
<td>4</td>
<td>0</td>
<td>0</td>
<td>18</td>
<td>41</td>
<td>59</td>
<td>30.51 #69.49</td>
</tr>
<tr>
<td>5</td>
<td>4</td>
<td>1</td>
<td>14</td>
<td>40</td>
<td>59</td>
<td>25.93 #74.07</td>
</tr>
<tr>
<td>6</td>
<td>2</td>
<td>0</td>
<td>42</td>
<td>15</td>
<td>59</td>
<td>*73.68 26.32</td>
</tr>
<tr>
<td>7</td>
<td>2</td>
<td>0</td>
<td>16</td>
<td>41</td>
<td>59</td>
<td>28.07 #71.93</td>
</tr>
<tr>
<td>8</td>
<td>11</td>
<td>0</td>
<td>22</td>
<td>26</td>
<td>59</td>
<td>45.83 #54.17</td>
</tr>
<tr>
<td>9</td>
<td>1</td>
<td>1</td>
<td>8</td>
<td>49</td>
<td>59</td>
<td>14.04 #85.96</td>
</tr>
<tr>
<td>10</td>
<td>5</td>
<td>0</td>
<td>38</td>
<td>16</td>
<td>59</td>
<td>*70.37 29.63</td>
</tr>
<tr>
<td>11</td>
<td>1</td>
<td>0</td>
<td>41</td>
<td>17</td>
<td>59</td>
<td>*70.69 29.31</td>
</tr>
<tr>
<td>12</td>
<td>3</td>
<td>1</td>
<td>37</td>
<td>18</td>
<td>59</td>
<td>*67.27 32.73</td>
</tr>
<tr>
<td>13</td>
<td>12</td>
<td>0</td>
<td>38</td>
<td>9</td>
<td>59</td>
<td>*80.85 19.15</td>
</tr>
<tr>
<td>14</td>
<td>4</td>
<td>0</td>
<td>28</td>
<td>27</td>
<td>59</td>
<td>?50.91 49.09</td>
</tr>
<tr>
<td>15</td>
<td>2</td>
<td>0</td>
<td>28</td>
<td>29</td>
<td>59</td>
<td>49.12 #50.88</td>
</tr>
<tr>
<td>16</td>
<td>0</td>
<td>0</td>
<td>23</td>
<td>36</td>
<td>59</td>
<td>38.98 #61.02</td>
</tr>
<tr>
<td>17</td>
<td>2</td>
<td>0</td>
<td>29</td>
<td>28</td>
<td>59</td>
<td>?50.88 49.12</td>
</tr>
<tr>
<td>18</td>
<td>2</td>
<td>0</td>
<td>48</td>
<td>9</td>
<td>59</td>
<td>*84.21 15.79</td>
</tr>
</tbody>
</table>

The last two columns of validity and invalidity correspond to the percentage of correct answers.
and wrong answers after seeing the gestures respectively. This table shows that the gesture instructions helped the subjects to understand some usages (indicated by *) while they didn’t work much for the rest (indicated by #). Although the valid cases slightly outnumber the invalid cases, we need to consider what factors lie between these valid and invalid groups of usages. Before we analyze that important topic, we will see some of the comments from our subjects who took part in the experiment. The participants of the experiment were asked to respond to an open-ended questionnaire which was designed to solicit their introspective comments on this instruction. Among 59 comments, 47 of them (79.7%) were positive feedback to this new method, while 12 comments (20.3%) were rather critical of it. See some representative examples:

Student A: “Some senses which I didn’t know at first just popped into my mind when I saw the gestures…”

Student B: “Phrasal verbs are always troublesome, but this is a good rescue from mere memorization of them…”

Student C: “This method works as long as concrete examples are concerned but the meanings of more figurative or peripheral usages are beyond this direct method, which, after all, is based on direct experience by observing the performances.

Students A, B talked about the advantageous aspects of the method, particularly A’s comment “senses popped into my mind” may imply that the knowledge he acquired through deciphering gestures had been organized into a procedural type of knowledge. However, student C’s comment summarizes the limits of the present idea clearly. These invalid cases (indicated by # in Table 2) are all concerned with figurative usages of stand while these valid cases (*) are connected with more or less prima-facie examples whose senses are easily inferable or transparent. Learners can grasp senses of phrasal expressions by observing the gestures and inferring the messages as long as they are inferable, otherwise they need further description which helps them follow a metaphorical extension path from a transparent usage to more peripheral one. Meanings of phrasal verbs cannot be exhausted just by image schemas. More factors must be involved. Further survey of this issue is strongly suggested.

2.4 Experiment 3: semantics of English present perfect progressive

Experiment 3 was on semantics of present perfect progressive, which many of Japanese learners of English tend to consider difficult. This time, 59 subjects (the same group of participants as in the previous two experiments) were tested their understanding of the meaning of present perfect progressive. When we hear a sentence like “my father has been washing his car
since this morning,” we naturally infer that the washing action is still going on. However, a sentence like “I’ve been running” responding to a question “why are looking so tired?” doesn’t entail that running is still going on. The running process must have been ceased. This observation suggests that we have to assume two types of present perfect progressive. However, some grammar books published in Japan take continuation of process as a necessary condition and even claim that the lack of it renders the sentence ungrammatical. Therefore, learners feel puzzled when they come across some examples which obviously violate the rule which they assume to be true. This experiment was designed to respond to this elusive semantic issue and also to measure the effectiveness of applying cognitive linguistic insight to learning semantics of present perfect progressive.

2.4.1 Procedure
See the procedure of this last experiment:

(i) 59 subjects were divided into the experimental group G1 (n=29), and the control group G2 (n=30).
(ii) Only G1 was given cognitive linguistic explanation of the meaning of present perfect progressive using animated pictures. G2 was offered a conventional explanation.
(iii) Both groups took the same test.
(iv) The difference between two groups was measured statistically and analyzed.

2.4.2 Cognitive linguistic explanation of present perfect progressive
According to Langacker (2001) and Radden & Dirven (2007), the meaning of present perfect progressive is compositional, i.e., a combination of that of progressive and that of present perfect. First, the progressive functions for putting the end point of an action out of focus and puts focus on the durational phase. Second, present perfect functions for placing the event into the indefinite past. It also requires us to search for current relevance. The current relevance can be either a continuative state or a resultative state. This explanation is summarized in (2).

(2) Compositional analysis of present perfect progressive
(i) Progressive focuses on durational phase of an activity and puts the end-point out of focus.
(ii) Present perfect focuses on the present time and puts the event into indefinite past time.
(iii) Present perfect requires an interpreter to search for current relevance of the past event to the present time. Current relevance may be either the continuation of the activity to the present moment or a resultative state which is caused by the activity.

( Langacker, 2001 ; Radden & Dirven, 2007 )

The above elucidation captures semantics of present perfect progressive precisely and compactly
but still is not utilizable when one has to consider an aspectual feature of a sentence containing present perfect progressive. We need to translate the above criteria into more accessible description. A possible solution is displaying an animation which shows the compositional feature of the construction deftly, clearly and memorably. Figure 3 with 3 pictures below was in fact a set of movable pictures with animation effects, which appeared in this order when it was displayed to the subjects.

![Diagram of present perfect progressive]

**Figure 3** Compositional illustration of present perfect progressive

This animation was shown three time to G1. The subjects in G1, who saw the animation, were instructed both to imitate “teaching gestures” (i.e., gestures used deliberately by a teacher to help his students) and to repeat vocal instructions simultaneously after the teacher, which were abbreviated statements similar to (2) above: “focus on the durational phase,” “put the end point out of focus,” “put the event back into indefinite past,” “search for current relevance,” and “current relevance can be either continuative state or resultative state.” This was conducted with an expectation of positive effects produced by combination of visual, vocal, and gestural modalities. After this stage all the subjects took the test, which asked them to judge each sentence with present perfect progressive as a case of (i) continuative action; or (ii) ceased action with a resultative state; or (iii) both interpretation possible.

### 2.4.3 Result of the test

Table 3 shows the descriptive statistics for T-test between G1 and G2. The result shows G1 modestly outperformed G2 and that there is a statistically significant difference between G1 and G2 ($t(57)=2.77, *p<.05$). Therefore, the cognitive linguistics based instruction worked favorably.
3. Discussion

We saw the outline of three experiments above. In this section we will consider the results of three experiments and the implications. All three experiments, particularly experiment 1 and 3, have shown favorable results for cognitive linguistics based instruction even though the degree of efficacy in each experiment is varied. Therefore, we can safely say that cognitive linguistics based instruction is beneficial to learners as far as linguistic items that we dealt with in these experiments are concerned. As for experiment 1, showing the cognitive linguistic diagrams illustrating visually the distinction between countable and mass nouns was beneficial and functional. As for experiment 3, the animation illustrating the compositional feature of English present perfect progressive was helpful. Teaching instruments such as the cognitive linguistic diagrams, and the animation were used to translate complicated concepts into directly perceivable and accessible to subjects without prior knowledge of cognitive linguistics.

Experiment 2 showed that using content-loaded, representational gestures to help subjects to infer polysemous senses of verbal phrases with *stand* was of limited efficacy. Even though there is considerable evidence that gestures affect perception and interpretation of language, their effects are still auxiliary particularly when used to show more figurative expression like “to get stood up for a date.” In order to make gestures more beneficial in teaching polysemous senses of this kind, we need to consider a combination of a cognitive diagram which helps learners to trace a metaphorical extension pathway with representational gestures.

4. Conclusion

We have two research questions. The first question is on whether a cognitive linguistic approach is applicable to teaching and learning English. The second question is how we can render cognitive linguistic concepts accessible to learners without assuming any prior knowledge. As an answer to the first question we can say that cognitive linguistic based approach is beneficial. However, at this present stage we cannot determine in what linguistic fields cognitive linguistics based instruction is effective and beneficial. I think it is simplistic to assume that all the findings in cognitive linguistics are applicable to teaching English. Cognitive linguistics assumes that a language is usage-based and that many aspects of language are grounded on embodied experience.

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However, these tenets do not mean that cognitive linguistics is simple in its structure. To the contrary, cognitive linguistics is structurally-complex in its own right with a lot of sophisticated theory-internal concepts, which in turn requires teachers who desire to apply it to their teaching to concentrate on learning them over a prolonged period. At this stage we must confine ourselves to say that we need to have a lot more of further experimental evidence to show what linguistic aspects cognitive linguistics based instruction is favorably compatible with.

In relation to the second question, one condition we should remember here in applying cognitive linguistics based instruction to our teaching is that we should devise well designed, diagrams, gestures or animation which may represent notions and concepts of cognitive linguistics concerned concisely, precisely and clearly. Introducing jargons or technical terms from cognitive linguistics into a classroom seems to confuse our students.

Notes

1. Participants in these three experiments were from the same class. The total number was 59. These experiments were conducted on three different days with a week interval in July, 2012. 2. Original comments were written in Japanese. The author translated into English for this paper.

Acknowledgement

This research was partially supported by the Ministry of Education, Science, Sports and Culture Grant-in-Aid for Science Research (C), No. 21520612.

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Appendices

Appendix A: Test for experiment 1

1. There are a lot of gravels in the box.
2. There is a lot of gravel in the box.
3. There are a lot of rices in the bag.
4. There is a lot of rice in the bag.
5. There are a lot of beans in the bag.
6. There is a lot of bean in the box.
7. There are a lot of pebbles in the box.
8. There is a lot of pebble in the box.
9. There are a lot of sunflower seeds in this tray.
10. There is a lot of sunflower seed in this tray.
11. There are a lot of grass seeds in this tray.
12. There is a lot of grass seed in this tray.

Appendix B: various usages of stand

1. to let the mixture stand
2. the police told them to stand back
3. to stand at attention
4. to let the issue stand
(5) to stand out in several sports
(6) the boss always stands over me
(7) stand the test of time
(8) won’t stand for such treatment
(9) to stand in someone else’s shoes
(10) we stand on 30 years experience
(11) to stand on shaky ground
(12) to stand by your man
(13) to stand against great odds
(14) they did nothing but stand around
(15) it stands to reason
(16) to get stood up for a date
(17) to stand to profit
(18) to stand in the way

**Appendix C : Test materials for semantics of present perfect progressive**

**Question 1** Read the following and classify each of which as case (i) : where its process is still going on at this present moment; or case (ii) : where its process has been ceased leaving current relevance to the present time; or case (iii): where both cases above are possible.

1. You’ve been fighting again. I can tell that from your black eye.
2. He has been fighting for an hour on the ring.
3. John has been fighting.
4. It’s been snowing. Look. The ground is white.
5. It’s been snowing since this morning.
6. It’s been snowing.
7. Have you been crying? Your eyes are red.
8. Kyoko has been crying for 2 hours.
9. You have been practicing the violin. I can tell this from your violin bruise.
10. I have been working all day.
11. He has been trying to get Sally on the phone. But his attempts are all in vain.
12. Somebody has been sitting in my chair. And it is broken!
13. Somebody has been eating my soup and the bowl is empty.
15. A: What have you been up to? B: I’ve been reading this book since this morning.

**Question 2** Explain the difference in acceptability of (a) and (b).

(a) ? My father has been washing his car and now he is in the living room drinking coffee.
(b) My father has been washing his car and his clothes are still wet.
Title of Submission: Living in the flow: An account of the relevance of spirituality to university life.

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Email Address: kathleenbarnard7@gmail.com
In 2004 I successfully defended a thesis which argued that many of the problems in education (both higher education in general, and teacher education in particular) were not only socio-political in nature, but spiritual as well. I suggested that what is needed in faculties of education are conversations which will take us into the deep places of our inner lives to the bedrock of our beliefs about ourselves, life, the world, and our relationships within them. I also suggested that there was a need for a contextually sensitive and responsive curriculum and pedagogy that would strike a balance between a focus on self and society, the individual and the relational, and the socio-political and the spiritual or “religious”.

The inquiry was a two-pronged, longitudinal study in testimonial reading (Boler, 1999), a practice which involves approaching texts with a disposition of receptivity, humility, and hospitality. I wrote that testimonial reading regards our reactions to various texts as sites for the interrogation of how those texts challenge our investments in familiar socio-cultural values and save us from allowing our reactions to become a justification for dismissing various texts, regarding their authors with disdain and thus opening the way for yet another ‘small’ or ‘big’ act of cruelty to be committed (Boler, 1999; Barnard, 2004).

The study was “two-pronged” or “double” in that it involved a double engagement in the practice of testimonial reading, first in relation to scholarly texts written by those whose voices had historically been pushed aside in the formulation of public education in what might commonly be referred to as the Modern West, and second, in relation to a particular set of spiritual texts. It was in part the self-knowledge which derived from the first engagement in the practice of testimonial reading that led me to the second set of texts. What I “found” in the context of that second set of readings shocked me and has left me in a state of wonder even to this day, some 10 years later.

In keeping with the recent trend in higher education, that is, toward an increasing interest in matters of the spirit (Beech, 2012; Astin, Astin, & Lindholm, 2010, Tisdell, 2007; Wallace in Tisdell, 2007; Sommerville, 2006) and the relevance of spiritual matters to research and teaching, I propose to present an update of that study which includes a testimonial narrative that illustrates how the life and professional practice (i.e., research and teaching) of one university educator is being radically transformed by the findings of a continued testimonial engagement with a particular set of spiritual texts and a discussion of the potential implications of that one exemplar for higher education in general.
References


Proposal Title (Modified):

From Michael Brown to Paula Deen: Guiding Critical Conversations in Today’s Classrooms

Topic Area(s):

Teacher Education, Cross-disciplinary areas of Education

Presentation Format:

Poster Session

Description:

Educators have a vital role in the creation of student understanding within the topics of diversity, inclusion, and multiculturalism. It is important to gain an understanding of our role when issues that challenge these understandings arise in society and, consequentially, become the topics of conversation within the classroom. This project will set the foundation for future research addressing how educators use these conversations as formative learning opportunities and the levels of preparedness to do so.

Author:

Dr. Kimberly Edwards-Underwood, Associate Dean
College of Education
Chicago State University
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ABSTRACT

Content:

As educators, we have a vital role in the creation of student understanding within the topics of diversity, inclusion, and multiculturalism. Yet, it is important to gain an understanding of our role when issues that challenge these understandings arise in society and, consequentially, become the topics of conversation within the classroom. How do we, as educators use these conversations as formative learning opportunities? Does teacher preparation adequately prepare us to do so?

Significance of the Content:

This project will set the foundation for future research in this field. This session allows for the contribution to various fields through academic writing on the topics of diversity and teacher preparation and enhances participants' own individual understanding of this topic through scholarly discourse around individuals’ reflection on teacher preparation.

Objectives and Outcomes:

Although many have an understanding of multicultural cultural education, this topic looks into the less explored aim of teacher preparation processes within the development of culturally competent citizens. The primary goals of this session are to conduct primary surveying around experiences within teacher preparation and set the foundation for future research and inquiry within this topic.
Character Formation in Cultural Intersections

Abstract

Character education is a deliberate effort to nurture universal attributes that combine morals, values, and virtues (Ontario Ministry of Education, 2008). The increasing number of first generation immigrant children in Canadian public schools crystallizes some of the tensions inherent in the idea of and approach to character education. My research will examine the sources of this tension, with an eye to fostering the ability of Ontario’s schools to support character development among children from diverse backgrounds and home lives. My primary question is: what are the challenges to shaping a student’s character in cross-cultural settings, and what strategies can address them?

My graduate studies, along with my own background as a migrant to Canada, and with children in the public school system helps me to understand some of the issues and challenges inherent in character education, such as: what attributes are to be taken as universal, who determines these attributes, and on what basis, in cross-cultural settings? Parents and families are primary teachers and character builders of their children. Later, educators and educational institutions enhance the character building process. However, the concept of character is elusive and abstract, since character is neither a mere set of personality traits, nor is it just an embodiment of ideals. It is both social and cultural in its constitution as character formation and cultural convictions are interconnected. Character development is embedded into all educating and learning processes. However, it is obstructed in a diminution of cultural depth and substance. Many teachers in a cross-cultural setting grapple with the problems as they lack cultural capital to be in a comfortable position to foster the character development of students who are different from them, culturally and linguistically. This issue is important in Canada since teachers in such a situation face challenges to maintain cultural harmony between students from immigrant, and mainstream cultures.

This study will utilize a phenomenological lens to investigate the essence of peoples’ experiences. I will involve teachers and students from Ontario secondary public schools. I will solicit 12 research participants through referrals from contacts within schools. I will provide the participants with the open-ended structured interview questions in advance via email to obtain thorough data. Then, I will interview the participants, using semi-structured interviews, lasting 40-50 minutes. My secondary source of data will be Canadian character development initiatives which I will examine through the lens of critical discourse analysis, and use an ongoing and inductive data analysis process that involves a systematic search for meanings out of the thematically coded and sorted data.

My research will fill the current gap in the literature on character education in cross-cultural settings, providing ways to address issues of character building and opening avenues to create common ground for building consensus in cross-cultural settings. I plan to share the findings of this research, initially through presentations at academic conferences and then also in the appropriate academic journals.

Transitioning to P-12 Impact Study: Empowering Student Teachers as Action Researchers (STARs)
Dr. Lori M. Dassa, Dr. Patricia E. Heydet-Kirsch, & Jana M. Chusid

Abstract

Beginning teachers spend the first few years of their professional career transitioning from the college classroom to ownership of their P-12 classroom. They are focused on lesson plans, learning how to work with their students, and becoming part of the P-12 school culture. Although it is expected that they measure student learning outcomes and use the data to inform instruction, the reality is they are often in survival mode. Limitations such as time, research skills, focus and a lack of collaborative partnerships often deter new teachers from action research in their classrooms. While there is a national urgency for classroom teachers to demonstrate a positive impact on P-12 student learning, the limitations teachers perceive to conduct reliable research are many. Conversely, the pre-service teacher does not perceive obstacles to conducting research in the P-12 classrooms they are placed for clinical experiences. Although pre-service teachers do not have ownership of a classroom they have the support of University faculty, classroom Clinical Educators, and an eagerness to investigate student strengths and weaknesses. Within the support of the pre-service cocoon, supervised clinical settings offer the ideal opportunity to learn how to conduct action research. These authors have developed a pilot program to support research experiences leading up to and including the student teaching capstone experiences within the teacher preparation program in a university setting.

Key Words: action research, student teaching, pre-service teachers
Introduction

The profession of education has become multifaceted requiring teachers to be involved in ongoing professional development and reflective practice. This compels teachers to become involved in professional development and reflective practices throughout the academic school year. These practices can be categorized as action research. Action research can be defined many ways but when associated with education it is “…the process of studying a school situation to understand and improve the quality of the educational process” (as cited in Hine, 2013, p. 152). Discipline specific action research is “…the process of conducting classroom research to answer questions or solve problems about teaching and learning involving a specific group of students in a particular setting” (as cited in Odhiambo, 2010, p. 2). These “school situations” and “specifics” can deal exclusively with students, teachers, administrators or the relationships between any of these parties. They can also occur within the identified classroom settings, grade level groups or school wide, and can be focused on academics or climate. Many beginning teachers have an interest in this practice and often enlist in a variety of professional development workshops to “…improve their teaching practice and learn how to deal effectively with everyday classroom issues” (Mitchell, Reilly, & Logue, 2008, p. 344). Although stated as an interest, many beginning teachers are unable to engage in reflective practice as they are consumed with a first year filled with lesson plans, classroom management, and building relationships and partnerships.

In this paper we take the collaborative action research (CAR) model designed for beginning teachers and explain why it needs to be implemented earlier by pre-service teacher candidates during the teacher preparation program. We explain what this revised model looks like as a teacher preparation design, implemented at the university level. We clarify how relocating the model to pre-service supports both pre-service and beginning teachers, and fosters a culture of assessment practice designed to improve P-12 student learning. Our goal is to support and train pre-service teachers to be ready to enter the profession as research based reflective practitioners able to effect positive change in their classrooms.

Collaborative Action Research (CAR)

Teachers regularly turn to professional development to improve their practices, often in the format of workshop trainings designed to improve discipline-based skills they will transfer to classroom teaching. They use these workshops to improve student learning outcomes within their classrooms. Too often teachers try to implement change and try new ideas in isolation. Often, the implementation of new ideas occurs in isolation, limiting the potential effectiveness of the change. The literature identifies the need for collaboration and reflection as the combination that leads to “…successful teacher professional development” (as cited in Jaipal & Figg, 2011, p. 60). It must be recognized that these two practices need to go hand in hand. Collaboration alone does not lead to a change in professional practices (Jaipal & Figg, 2011). When reflective inquiry is embedded into this collaboration, teachers become investigators and willingly conduct collaborative action research (CAR). The positive results of CAR result in “teams of teachers [that] may examine the same question, leading to higher levels of interactions and improving relationships with colleagues” (as cited in Hah-Vaughn & Yanowitz, 2009, p. 149).

Unfortunately, the CAR model has severe limitations for beginning teachers because they are in survival mode. This mode can be “…distinguished by the teacher’s self interest and self
concern, for instance getting through the day and planning for a short period of time” (as cited in Ginns, Heirdsfield, Atweh, & Watters, 2001, p. 1). Their focus during this first year is lesson planning, classroom management and creating a professional identity. This leaves very little time to include collaboration, building relationships with colleagues and reflective inquiry. One teacher summarized, “How can I justify all of this research with so many other things going on in the classroom?” (Christenson et al., 2002, p. 265). Teachers are rarely given release time to conduct an action research project and therefore would have to eliminate other pertinent daily activities (Christenson et al., 2002) to manage the time to accomplish these tasks, possibly causing deficiencies in their classrooms.

The authors made an alteration in collaborative action research which eliminated many of these stressors by bringing CAR into the teacher preparation program at their university. Modifying the CAR model by supporting implementation of action research in a supervised, pre-service setting defines Student Teaching, creating the Student Teaching Action Research (STAR) model. The student teacher candidates in this model begin the process as pre-service teachers developing the content and pedagogical skills they need to be successful in research-enhanced clinical teaching settings. The literature supports that CAR is an excellent theoretical framework but in reality is not being practiced with beginning teachers. In fact, a study of eight teacher teams was conducted in Ontario, Canada that reinforced this. The study came to the conclusion that although the idea of collaborative action research (CAR) was an interest most of the teachers reported similar results that projects did not occur because of three factors, “time to engage and collaborate, workload, and group dynamics” (Jaipal & Figg, 2010, p. 69). This is “…consistent with factors reported as challenges experienced by teacher action researchers in the literature” (Jaipal & Figg, 2010, p. 69). Beginning teachers are so overwhelmed with time management, intense lesson designs and instruction and limited collaborative opportunities, there leaves no time to engage in action research based projects. In fact, “a few teachers considered the collaborative requirements of action research to be idealistic because this expectation counters the individualistic life of most teachers” (Christenson et al., 2002, p. 265). They run their classrooms by themselves, create lesson plans by themselves, assess student work by themselves and work together when assigned to learning team meetings for grade collaboration. By placing this CAR in the teacher preparation program we are eliminating many of the challenges discussed by beginning teachers. After completing a study of beginning teachers and action research Ginn et al. (2001) suggested that “…the place to commence the development of teachers’ understandings of action research is in pre-service teacher education programs” (p. 14). Ginn et al. (2001) went on to state that

Requiring students to engage in action research, in particular, in the final year of pre-service programs, could play an important role in developing their awareness and understanding of, and immersion in, the culture of action research” (p. 14).

They felt the best way for action research success was to somehow move this process into the teacher preparation program, an idea the authors used as a catalyst for the pilot design of the STAR program.

From CAR to Student Teaching Action Research (STAR)

“Collaborative action research focuses on creating climates of inquiry in communities of practice, often with different stakeholders functioning as co-researchers” (Mitchell, Reilly, & Logue, 2009, p. 345). This is a perfect platform for the STAR model. Student teachers become
the action researchers and partner with University faculty and Clinical Educators as co-researchers. In fact Kitchen and Stevens (2008) surveyed pre-service students that were given the opportunity to conduct action research. They found that “a significant number of pre-service teachers indicated that engaging in action research expanded their conceptions of teaching; such expansions holds potential for fostering change in schools” (p. 7). This alters the perspective of research as a commonality in the undergraduate arena and connects it clearly to the practice of the teaching profession. Kitchen and Stevens (2008) believed that if this could be established it, “…could encourage inquiry and reflection, connect theory to practice and link pre-service and in-service teaching” (p. 8). This reflection is the professional development expected by beginning teachers.

It also allows the focus of pre-service teachers to be altered from coursework completion to inquiry reflective processes. Student teaching experiences focus on lesson planning and delivery, and classroom management strategies. STAR would allow them to focus on the students they are working with and how to increase P-12 student learning. Rock and Levin (2002) conducted a study on a group of interns (student teachers) engaged in CAR through their university and school district in North Carolina. Several different patterns emerged from this study including:

1. a change in refocusing on student perspective
2. a new understanding of their roles as teachers
3. and the need for developing reflection skills to use in their future teaching. (Rock & Levin, 2002)

### Student Perspective

The pre-service teacher candidates shared that, “…they were valuing the student perspective for the first time and understanding the part it plays in the teaching and learning process” (Rock & Levin, 2002, p. 15). The students were surprised by how little they focused on the students in the classrooms before they completed CAR. The STAR model allows these pre-service teachers to conclude their degree and begin their career thinking about the P-12 children they service. In fact, “…teachers who engage in action research often are required to interact more with students and consequently increase their awareness of student needs within the class” (Levin & Rock, 2003, p. 140). In other words by default STAR will cause pre-service teachers to become stronger teachers focused on P-12 student learning during their teacher preparation program. STAR participants in this pilot will learn to focus on P-12 student learning before they enter the field. They are given the opportunity in their clinical practicum experiences (two 90-hour placements) to investigate students’ academic, social, or cultural needs. Pre-service teachers conduct observations and data, connect their findings to current literature, and review best practices regarding P-12 student learning. This practicum time is an opportunity to reflect and observe how teachers make impact decisions to benefit the success of their students. The pre-service teachers use this model to guide the future capstone action research experience.

### Perception of Their Teacher Role

According to these candidates, once they refocused their learning toward the students a realization occurred about their true roles and responsibilities as educators. It was more than just lesson plans, subject matter content, and management but recognizing the role of “teachers as
researchers” to increase the P-12 student leaning in their classroom. In fact many pre-service teachers given the opportunity to conduct action research in the field see the experience as, “…a process of transformation and change into a teacher as a result of the interactions they shared with students and cooperating teachers” (Subramaniam, 2010, p. 543). The profession becomes real to them and their identity and definition of “teacher” morphs into “change agent.” These pre-service teachers have the realization that “…reflective practice is a critical responsibility of teachers and [recognized] that professional growth and development is a personal responsibility” (Levin & Rock, 2003, p. 140). These are very different roles than previously considered before STAR. This revision is crucial for pre-service teachers as preparation for their own classrooms.

In a schooling climate where students’ performance and adequate yearly progress based upon standardized test scores dominate discussions of classroom activity and effectiveness, having a group of pre-service teachers see beyond subject area content to the larger social role of schooling [is] significant” (Parkinson, 2009, p. 803). The students at our university are given the opportunity to practice this new role during the summer when they engage in pedagogical and reflective discussions with the principals of the schools they have completed their practicum hours. These summer sessions are identified in the program as Summer Undergraduate Research Fellowship (SURF). In this SURF, they are immersed in research sessions designed to explore relevant questions and discuss how their research agenda relates to the schools, the observations they have conducted in practicum hours and how to employ an appropriate action research project during student teaching. They are given the opportunity in these sessions to take the lead role as researcher and share their findings and interests with the administration in a one on one setting.

**Future Teaching**

The supported discussions facilitate a bridge between pre-service teachers in university classrooms, and their new role as an educator dedicated to school culture and change. This climate, emphasizing the social role of education culture, is the environment our pre-service teachers need to be prepared for. STAR supports the development of the researcher role, leading to “…an understanding of the value of persistent questioning, reflection, action and change… all potential outcomes of engaging in teacher action research” (Rock & Levin, 2002, p. 17). Teacher candidates will leave the program with the realization that the STAR they conduct and the research skills they developed in student teaching are integral to P-12 student learning, and their success in the teaching profession. “Exposure to action research must be established earlier in the pre-service years in order for teachers to be prepared to use action research in their classrooms” (Odhiambo, 2010, p.1). Teachers are currently required to question, reflect, and create change within their classrooms. With STAR the pre-service teachers are given the opportunity to develop a stronger skill set in these areas, with the support of faculty researchers and administration, so the actions are not overwhelming when they enter the field. Parkinson (2009) concluded that pre-service teachers that conducted research “…demonstrated the development of an appreciation of their ability and responsibility to develop their own expertise” (p. 802). The development and guided, supervised practice of these discipline-specific skills affords the pre-service teacher a sense of efficacy regarding research, enabling a seamless transition to professional classroom teaching. “These understandings acquired in the pre-service program would provide an ideal platform for beginning teachers to conduct their own
participatory action research projects …thus furthering their professional growth” (Ginns et al., 2001, p. 14).

Given that our students are completing this research process and STAR in the same zone (sub-division of the school district) of schools, they begin to develop their teacher identity in those schools. They will be comfortable working with those teachers and administration as beginning teachers just as they were as pre-service teachers. With those relationships already built the conversion will be rather seamless.

**Components of STAR**

By implementing the STAR model the teacher program acknowledges the need for teachers to learn to apply research methods in P-12 classrooms, and supports the idea that beginning teachers will need continued support. Especially since many of these established programs “…have come under attack for their failure to produce “quality teachers” (Clarke & Fournillier, 2012, 649).

The components of the STAR program include student ownership, development of inquiry, integration of action research and other program requirements designed to encourage success in a supportive setting. Clearly the focus of the research needs to be classroom based but it must be an area that interests the students as well so they are eager to conduct research and report findings. It has to answer the question, “how do I improve my work” (as cited in Kitchen & Stevens, 2008, p.12). Once the focus is selected the students need to be able to use inquiry skills to begin the research process.

“The inquiry process involves data gathering, reflection on the action as it is presented in the data, generating evidence through the data, and making claims to knowledge based on conclusions drawn from validated evidence” (as cited in Kitchen & Stevens, 2008, p. 12). This can include “…problematizing teaching events, raising questions about practice and planning for instruction based on an analysis of student needs” (Angelotti et al., 2001, p. 80). There are limitations to this development as well. The students cannot simply chose a topic based on interest without having a connection to their specific field. “Not every action research agenda is possible or worthwhile. Teacher candidates need help in framing, and reframing their questions, methodologies, and conclusions as they develop different approaches to change” (Price & Valli, 2005, p. 69). These skills need to be developed before the pre-service teachers enter their capstone experience.

If students are not offered opportunities to develop and practice research skills before the capstone, student teaching experience, they will struggle with the depth of the action research project they are trying to implement. Therefore there needs to be prerequisite courses in their coursework that allow this development to occur. In the authors’ pilot the undergraduate students take applied learning theory and educational measurement and evaluation courses where they have the opportunity to develop inquiry skills within the frameworks of theory and data as related to action research. They investigate and connect educational theorists and pedagogy to different aspects of action research and what they look like through the review of the literature. They analyze methodology in measurement and evaluation and report findings from both qualitative and quantitative studies already conducted. They have the chance to “practice” the prerequisite skills necessary to engage in future independent action research projects for their capstone experience. The scaffolding of research skills from exposure to skill building to intensive levels is intentionally included in the course design.
The last component of STAR is the integration of action research into their capstone rather than developed as an extra assignment. Angelotti et al. (2001) found in their examination of several pre-service research studies that this was a common theme of concern. The students felt that the action research was an “add on” to the coursework rather than viewing the process to be “teacher research and student teaching [are] integrated into one seamless experience” (p. 80). It is essential that the project is infused into what is occurring in the course and the field classroom. In the authors’ pilot the action research project is developed before the student teaching experience begins in the practicum courses. The students use a step by step process through research to develop their skills before they are expected to conduct the action research. They complete semesters of clinical practicum courses where they engage in field placement to observe and practice research in the field as well. Once the research question is designed, the literature is reviewed, and the research is practiced in clinical settings, and finally the action research is conducted in the student teaching classroom. Upon conclusion of the research project the findings are reported through a publication venue; whether it is a poster session in a research symposium on the university campus or published as an article in the university’s peer reviewed research undergraduate journal.

**Essential Partnerships and STAR**

This new design of the student teaching experience for pre-service teachers allows them to become reflective practitioners and future change agents within a particular school. Cochran-Smith and Lytle (1999) identified that teacher research is experiencing a new emphasis on”…how the teacher as a knower and as an agent of change defines and justifies appropriate outcomes of inquiry-based teacher education and professional development in light of the standards movement” (as cited in Subramaniam, 2010, p. 536). Pre-service teachers will be expected to make reflective changes within their classroom and school settings. This is very important for the development of their future teacher identity. They immediately feel they have a purpose and the ability to effectively create change (Zambo & Zambo, 2012).

In reality many of these pre-service teachers will not be given this opportunity because they are still viewed as guests in the school they are conducting their field work, not change agents. The typical student teaching experience is a placement in a school setting with mentorship from a cooperating experienced teacher and a university supervisor. “In most scenarios, the pre-service teacher gradually assumes more teaching responsibilities but rarely has complete authority over all educational decisions for the classroom” (Phillips & Carr, 2009, p. 208). They are identified as pre-service teachers who are not ready to teach their own classroom let alone conduct action research that will impact the school environment. This feeling may cause the pre-service teacher to feel limited in their opportunity to conduct STAR. They may feel that, “…the implementation of their action projects might disrupt the cooperating teachers’ space” (Subramaniam, 2010, p. 540). This is the cooperating teacher’s classroom and the pre-service teacher is supposed to learn from the teacher of record not alter the classroom dynamics with action research.

Partnerships become an essential component of the STAR project implementation. There needs to be collaboration and interest in STAR between the pre-service teachers, cooperating teachers and administration. Without all stakeholders actively involved, STAR cannot be conducted successfully and without inhibitions. Everyone involved benefits from the partnerships created. “Benefits to individual teachers, academics and students are in turn
benefits for the quality of the institution/system, the teaching, research and services that they offer” (Walkington, 2007, p.289). In this pilot the authors have developed a partnership between their university and the zone of schools located in a specific school district. The principals of these schools are making a commitment to the pre-service teachers encouraging them to conduct action research in an environment where change is needed. The students will complete the two practicum courses and their student teaching experience in this zone so they have the opportunity to build relationships with the principals and teachers before they are required to conduct their STAR. Levin & Rock (2003) found that when they paired pre-service teachers with cooperating teachers, the action research process completed smoother when they, “…were able to build a solid relationship prior to the upcoming student teaching experience” (p.145). This relationship allows the pre-service teachers to revamp their goals and no longer feel they are simply there, “…to promote good relations with cooperating schools and select topics of mutual interest with cooperating teachers” (Price & Valli, 2005, p. 59) as they have in the past. It builds a mutual benefit for the university and the district creating “…an environment of widespread professional development” (Walkington, 2007, p. 278). Pre-service teachers can investigate issues related to the school and communicate their action research ideas with the administration as well as the cooperating teachers.

“As designers and stakeholders of the research, they work with others to identify courses of action to enhance teaching practices. As researchers, the teacher/researcher gathers evidence from multiple sources to guide their practice and to make informed decisions based on evidence” (Mitchell, Reilly, & Logue 2009, p. 345).

The benefits of this partnership may result in “…establish[ing] effective professional development schools!” (Levin & Rock, 2003, p.136). This professional development will lead to the necessary changes for programmatic improvement and increased P-12 student learning throughout the school district.

Cohort Model

The students involved in this program are encouraged to take coursework and engage in STAR together. This builds in a system of peer collaboration and support. The students study and develop the research skills together and then engage in STAR simultaneously. The authors felt this was an important component of STAR because it mirrors the design of their future learning teams or grade levels in the school system. Koeppen et al., (2000) found that “the sense of community promoted by the cohort approach can reduce the feeling of professional isolation many teachers experience” (as cited in Seed, 2008, p. 214). This cohort cannot simply assume success because the pre-service teachers take coursework together. The program includes the pre-professional development sessions called Summer Undergraduate Research Fellowship (SURF) conducted over the two summer semesters involved in this cohort. The students come together each summer for several days to share research ideas, literature reviews and action research processes with each other, the faculty and the principals involved in these partnerships. The students have the opportunity to share with all the stakeholders involved both the positive experiences and challenging situations that they have been exposed to in the program. Chant, Heafner, and Bennett (2004) found this cohort model very successful when they engaged in pre-service action research studies. They concluded that the cohort model, “…allowed us to provide guidance regarding the project within their university seminars and connect it with their field and student teaching experiences” (p. 37). The students in their study reported they were,
“…able to make connections and develop collaborative relationships with their peers” (p. 37). This practice of collaboration with peers relates back to one of the limitations of CAR and beginning teachers. They mentioned that developing these collaborative relationships were often difficult in their first years of teaching. With the cohort model of STAR, pre-service teachers are submerged in collaborative practices they can use when they enter the profession.

Current Limitations of STAR

Unfortunately exposure, skill building and the application of research practice is not common in undergraduate teacher preparation programs. It is the assumption that, “typically utilized in graduate programs, action research is a viable tool for increasing pre-service teachers’ systematic classroom-based inquiry” (Carboni, Wynn, & McGuire, 2012, p. 50). If a student is earning a graduate degree, he or she will conduct action research throughout the program. This action research practice can continue once these masters’ leveled educators enter the profession. Unfortunately a majority of our beginning teachers graduated with an undergraduate degree, not from a graduate program. In 2002-2003 over 1,200 colleges and universities with education programs in the United States were surveyed. At that time 106,000 teachers were graduating with an undergraduate degree as compared to only 64,000 with master’s degrees and 1,000 with doctoral degrees (Levine, 2006). These undergraduates are now being expected to become reflective practitioners and conductors of action research without the proper research exposure and skill building in their undergraduate studies. Add this to the demands of being a first year teacher and it is understandable why so many beginning teachers leave the profession so quickly. It is unfortunate because with the correct training they can build a strong teacher identity early in their profession as reflective practitioners. Woolfolf & Hoy (1990) supported this when they stated,

“If they (new teachers) can prove their effectiveness, they come to see that they can and do make a difference in their students’ lives. When teachers gain this insight they work harder, and this realization allows them to have faith in their abilities and to persist longer in the field” (as cited in Zambo & Zambo, 2012, p. 63).

By relocating action research into the undergraduate programs theory and pedagogy become interlocked. The student teachers are exposed to the environment to develop these research skills and then transfer them into the classrooms they will soon command. “Research becomes a tool beginning teachers can use to continuously inform and improve practice, engage ongoing expertise development and not something student teachers read about in college and promptly forget when entering the world of teaching” (Mitchell, Reilly, & Logue, 2009, p. 349). This tool eliminates any fears of conducting action research in their own classrooms. In fact, “…many teachers [are] initially intimidated by the concept of research. However, with appropriate training, teachers in their study found the concepts learnable” (as cited in Hahs-Vaughn & Yanowitz, 2009, p. 415). Pre-service teachers will not have these concerns, taking their undergraduate research skills and applying them into the classroom immediately. It becomes a practice they develop in the undergraduate program and transfer to the educational arena. In fact the belief is that if pre-service are trained in conducting inquiry through action research then as teachers, “…[they] will be more likely to continue in this direction throughout their careers” (as cited in Rock & Levin, 2002, p. 8).
Conclusion and Future Practices

“Today’s teachers are expected to be more than just providers of information” (Hahs-Vaughn & Yanowitz, 2009, p. 422). They are expected to be reflective practitioners that drive instruction through data collected about their current students. Many beginning teachers are unfamiliar with this “action research” process when they enter the classroom. The STAR model may provide the perfect set of experiences to prepare pre-service teachers for they enter the 21st century classroom. STAR is a necessary undergraduate research opportunity that, “…should be promoted so that steps to narrow the gap between teaching and research can be executed” (Klingel & Erbes, 2012, p. 104). Adding authentic opportunities to practice action research within the framework and support of university teacher preparation programs will increase the likelihood of continued research practice. Pre-service teachers armed with the skills and confidence to conduct action research in the early years of their careers will assist school districts in their mission to improve K-12 student learning, and document the practices that lead to positive change. Having these skills will also help develop stronger future educators. Zambo and Zambo (2012) identified that strong research skills have a direct correlation to positive self-efficacy.

“New teachers enter the profession with determination, commitment, and passion to do things well and to do things better. They have a vision of what it means to be an effective teacher, and they want to be teachers who become change agents…They understand the need to learn and grow as teachers, and they want to master their craft” (Zambo & Zambo, 2012, p. 64).

Having STAR as their beginning research foundation will allow them to have these successes in their P-12 classrooms. “Action research has been touted to be a means of professional development and a means to hold on to ideals” (Zambo & Zambo, 2012, p. 64). Our hope is to develop future teacher researchers that make a positive difference in their school settings through action research. The authors will study their pilot and report findings as pre-service teachers engage in STAR and move forward into teacher researchers.
References


1. Title:

A Study on Effective Learning Strategies for Enhancing German Pronunciation in Second Foreign Language Learning

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A Study on Effective Learning Strategies for Enhancing German Pronunciation in Second Foreign Language Learning

In order to succeed in oral communication in a foreign language, it is important for foreign language learners to improve their pronunciation skills. This study investigated a particular learning strategy based on the use of autonomous self-reflection by exploring the learning students’ strategy use to see the effects on pronunciation improvement in segmentals (vowels and consonants) and suprasegmentals (intonation, rhythm, stress placements).

In this study, Japanese students learning German as a second foreign language (after English as a first foreign language) at a private university in Tokyo underwent a seven-week program in which they used a computer-assisted language learning (CALL) software to create their own sets of strategies for improving their pronunciation. Outcomes were measured by comparing pre- and post-pronunciation scores of students obtained through a native German phonetician who evaluated the student pronunciations before and after the program.

The learning strategies available in the CALL program for pronunciation were limited to 36 items from the original 68 items. The items are based on the phonetic learning strategy to which Peterson (1997) and Berkil (2009) applied and developed the questionnaire of Oxford (1990). After seven weeks of implementing the pronunciation program, we explored which pronunciation strategies were most effective in improving pronunciation (vowels, consonants, stress, rhythm and intonation). Statistical analysis was used to explore the coherence of pronunciation ability with the strategies used.
Title: Modeling strategies ethics in sub-Saharan Africa for higher education excellence

Topic area: Higher Education

Presentation Format: Paper Session

Description: This article aims to provide the means, methods and strategies for already practicing to fight against ant-values in superior institutions and universities in sub-Saharan Africa and the world.

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Abstract
Ant-values sometimes called cancer poisoning\(^1\) in higher and university education have eroded the integrity of education in several African countries. This work debauchery a question about the impact of social models in mind. Discussions and surveys on the fight against anti-values have revealed that the tumor is an obstacle to development in Africa. A group of appropriate strategies a predictive model of ethical excellence for African education is highlighted. Moreover, money, scholarship or salary is not completely happy, but it is the satisfaction that one derives from the portion that is allocated to one and all. The work is focused on: education in Africa and the strategy of ethics to apply to fill the genocide in the formation of the African elite, which is the basis of development for future generations.

Keywords: higher education, ant-value, decay, ethical and value, Sub-Saharan Africa, development

Modeling strategies ethics in sub-Saharan Africa for higher education excellence

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Abstract

Ant values sometimes called cancer poisoning in higher and university education have eroded the integrity of education in several African countries. This work debauchery a question about the impact of social models in mind. Discussions and surveys on the fight against anti-values have revealed that the tumor is an obstacle to development in Africa. A group of appropriate strategies a predictive model of ethical excellence for African education is highlighted. Moreover, money, scholarship or salary is not completely happy, but it is the satisfaction that one derives from the portion that is allocated to one and all. The work is focused on: education in Africa and the strategy of ethics to apply to fill the genocide in the training of the African elite, which is the basis of development for future generations.

Keywords: higher education, anti-value, decay, and ethical value, Sub-Saharan Africa development

1. Introduction

Global competitiveness and the development of nations are becoming increasingly dependent on their ability to duplicate, to consume and to advance the knowledge. Higher education in Africa has undergone in the last decade, a transformation that has been influenced and catalyzed by internal dynamics and external complexities related to the political environment and changes in governance. This is why it there's development and decay in African education.

Man is always looking for his humanity. Max Scheler2 (1928) asserts that the limit of ignorance, man has been before has a problem itself. This communication reveals a brief landscape of higher education in sub-Saharan Africa and its decay (destruction). What model can we practice to bring the values and ethics of the latter, and in countries where the cancer is in the process of biting the integrity of the teaching? Although this is demonstrated in the second point, there is a paradigm in crisis to force the corruption in education in Africa. Nationals of African universities fail to meet the needs of Africa. Even less for a one-time job employers recycle professional training or upgrading. The evolution of the decrease in the quality of education is due to multiple causes, including the anti-values remain a plague pandemic such as AIDS, Ebola and many other cancers that ruin all mankind and malicious destruction of Africa. Because the mentality and ethics are the keys to vaults for triggering any harmonious development of Africa.

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2Max Scheler: born in Munich on 22 August 1874 and died in Frankfurt am Main on 19 May 1928, is a philosopher and sociologist German.
This is why the study describes the evolution of the decay in education and a valid predictive model, including its implementation will give us positive for higher education excellence in achieving the goals of sustainable development (GSD).

2. The Education in Sub-Saharan Africa

Education in Sub-Saharan Africa, primary school to university is at stake for many years due to:
- In the misdeeds in tertiary institutions, non-texts respects the fact "that there are more roses without thorns"
- At the mismanagement of public good, egocentrism and despotic African laxity teachers face taught,
- In the inter-ethnic conflict, confusion of what's Republic become private or caste;
- A safe difficulty unrest, wars and rebellions in the regions and in capitals,
- Lack of infrastructure, grants,
- Parental involvement in the payment of fees, sales syllabus that are obsolete, static inappropriate techniques of information and communication;
- In the stillness of the lessons and students through appropriate policy,
- In non-encouragement of students by scholarships, excellence and travel, etc.
- At an inconsistent salary to teachers, academic personal, etc.

Kant Emmanuel³ confirmed that the human being is the only creature who must be educated. When the studies are taken into account as the first concern of the government, the country will reach the long-sought development, as Nelson Mandela⁴ said: "Education is the most powerful weapon to change the world."

What is human science or technology capable of integrating a sensor sensitivity of education for love and freedom that the world considers worthy to transform humans to life in all dimensions? This is the question that everyone is asking, because the human being is the core of all things. Analyzes of beliefs, symbols and rituals with the moral and ethical behavior, the human being is always in search of universal happiness, while happiness is not discovered in the number of properties that we own, but satisfaction that one derives from the portion that we have allocated. The Tuning Africa initiative which is an outcome of the commission of the European Union and Africa Union commission is one such continental effort that strives to harmonize the disparate higher education systems in the region, but the modeling strategies ethics in sub-Saharan Africa for all education system is governed by the relation (1.1)

\[ u(x_1, x_2, \ldots, x_n, u, \frac{\partial u}{\partial x_1}, \ldots, \frac{\partial u}{\partial x_n}, \frac{\partial^2 u}{\partial x_1^2}, \ldots, \frac{\partial^2 u}{\partial x_n^2}) = 0 \]  

The simple comparison of ethics between Anglophone countries and Francophone nations, the Anglophone is two better by Francophone. But the member hour in class of Francophone country is very high than Anglophone country.

The solution of (1.1) oblige in the future:

³ Emmanuel Kant: is a philosopher German, founder of "transcendental idealism." Born on April 22, 1724 in Königsberg, the capital of East Prussia, died there on 12 February 1804. Great thinker of the Enlightenment, Kant had a considerable influence on German idealism, the analytical philosophy, the phenomenology and postmodern philosophy.

⁴ Nelson Mandela: born 18 July 1918 in Mvezo (Cape Province) and died on 5 December 2013 in Johannesburg, is a statesman of South Africa; it was one of the historic leaders of the struggle against the institutional political system of racial segregation (apartheid) before becoming president of South Africa from 1994 to 1999, following the first non-racial national elections of the history of the country.
- The informations of initials conditions and evolution. The limit and the strategy for leading the best ethic application to infinity; the unobservable interface of the antivalues action for minimization in education, and others services of sub-Saharan Africa.

2.1. Structure of a good education Failure

The simulation of the keys to good growth of higher education elements is not respected and negotiable.

\[\text{Social demand: Opening access to higher education broadly and as fair as possible, ease of entry, security education ...} \]

\[\text{Quality requirement: is to provide quality educational services both in the field of education than in research. Remove persons of legal ethics and good values as a teacher or academic staff and fight against anti-values, as they became the first flail fight the development of society.} \]

\[\text{Economic need: it is a system that meets the effective demand both in quantity and quality to meet the needs of society and the labor market. Where an African student must be able to defend his diploma in his country and abroad.} \]

\[\text{Financial means: the elaborate structural strategy is financially sustainable given the available national resources, external resources that could be mobilized and public intersectoral trade-offs.} \]

While African governments do not care about social demand, forget the quality requirements and neglects economic need. Organizations (NGOs, foundation, non-profit organization ...) such as UNESCO, UNICEF, TUNING Academy, the ASEAD (Academy of Science and Engineering for Africa Development), the AEDA (Association des Etudiants pour le Développement de l’Afrique) ... focus more on improving African education.

**Sub-Saharan Africa:**

- Make research and project execution on the construction, rehabilitation of primary, secondary, professional and academic due to the increase in population, facilitate capacity.
Forget the quality requirements while continuing to poison the cancer integrity of African education without any anxiety, lack of educational facilities for quality training, we can mention 25% of higher education institutions in some countries Sub-Saharan Africa that give a teaching value and quality with the following tables explain.

**Table 1: Level of training between public and private institutions in DR Congo**

<table>
<thead>
<tr>
<th>Establishment</th>
<th>% Of students in the DRC</th>
<th>% Of teachers in schools</th>
<th>Level of training (theory and practice)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Public institutions (ISTA, ISC, INBTP, ISAU, ISP ...)</td>
<td>25%</td>
<td>40% of prof (Ph.D), 60% of CT and Assistants</td>
<td>Average (55% theory, 30% practice)</td>
</tr>
<tr>
<td>Private institutes (ISIPA ...)</td>
<td>10%</td>
<td>10% prof(Ph.D), 90% of CT and Assistants</td>
<td>Low (45% theory, 40% practice)</td>
</tr>
<tr>
<td>Public Universities (UNIKIN, UNILU, UNIKIS, UPN ...)</td>
<td>50%</td>
<td>70% of prof(Ph.D), 30% of CT and Assistants</td>
<td>High (60% theory, 20% practice)</td>
</tr>
<tr>
<td>Private universities (USK, UNIC ULK ...)</td>
<td>15%</td>
<td>15% prof(Ph.D), 85% of CT and Assistants</td>
<td>Average (55% theory, 40% practice)</td>
</tr>
</tbody>
</table>

Regarding the level of training, we present the theory, practice and the rest of the percentage is for personal research students. A constant is that in public institutions, we note that the personal search for each student is 15% on 55% theory and 30% practical. As private institutions, there is a balance between theory and practice for the 45% and 40%, with 15% of personal research. For public universities, with its high training among institutions in the country with 60% theory, 20% practice and keeps 20% of personal research. And as for private universities, in part, they retain 55% of theory, 40% practice and 15% for individual research of each student.

**Table 2: Balance of public and private Institution.**

<table>
<thead>
<tr>
<th>Public Establishment</th>
<th>Private Establishment</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Academic costs are lower</td>
<td>- Academic fees are higher</td>
</tr>
<tr>
<td>- Non-teacher motivation</td>
<td>- Teacher motivation</td>
</tr>
<tr>
<td>- Teacher exchange Difficulty</td>
<td>- Easy exchange of teachers</td>
</tr>
<tr>
<td>- More theories that practices</td>
<td>- Less than theories that practices</td>
</tr>
<tr>
<td>- Dispense a strong and distinct education regardless of income</td>
<td>- Exemption low education taking into account income</td>
</tr>
<tr>
<td>- High rate of teachers (Ph.D) as Assistants and Heads of work</td>
<td>- Low teachers (Ph.D) that wizards and Heads of work</td>
</tr>
</tbody>
</table>

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6 The Poisoning Cancer Core Higher And University Education in Sub-Saharan Africa, Where The Democratic Republic Of Congo, HICE 2014 www.hiceducation.org # ISSN: 1541-5880, pp 2145 and 2146
Most universities product (students) African does not meet the needs of society (economic needs test), do not perform their jobs, not defending their diplomas; putting doubt in African residents degrees in country and abroad. While we produced the Engineers, Builders, Architects, Planners ... but exploits others come to renovate and modernize the city while we annually produces graduates as well qualified. Difficulty in job market and it all falls on the government. For a lawyer unable to perform his job, a management or marketer unable to create jobs. Corruption and anti-values are planned, organized better than teaching and research in sub-Saharan Africa. An evidence of growth and sub development.

All this depends on the nucleus that is the financial means. Education in Sub-Saharan Africa is not necessarily funded, motivated:

- Difficulty in mobility of teachers and students by an appropriate policy,
- No scholarships, excellence and travel, etc.
- A non-consistent teacher’s salary, personal, etc.

When we talk of financial means, it refers (see) the government, investors, domestic and international organizations that are involved in education. Primary, secondary, vocational, higher, research laboratories, libraries... need good equipment for training, where the statistics of the World Bank says.

Table 3: The evolution of public expenditure (World Bank)

<table>
<thead>
<tr>
<th>Year</th>
<th>Primary Education (millions of CF)</th>
<th>Secondary Education (millions of CF)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2005</td>
<td>190,044</td>
<td>232,828</td>
</tr>
<tr>
<td>2006</td>
<td>244,296</td>
<td>277,809</td>
</tr>
<tr>
<td>2007</td>
<td>315,514</td>
<td>303,284</td>
</tr>
<tr>
<td>2008</td>
<td>309,158</td>
<td>591,158</td>
</tr>
</tbody>
</table>

When we talk of financial means, it refers (see) the government, investors, domestic and international organizations that are involved in education. Primary, secondary, vocational, higher, research laboratories, libraries... need good equipment for training, where the statistics of the World Bank says.

The Congolese government is unconscious for preschool basic whom some countries support children kindergarten to primary school. The ethic model equation (1.1) can develop by three division primary, secondary and higher education.

3. Strategy of the ethics to be applied in sub-Saharan Africa

Why antivalues became news in sub-Saharan Africa, more in higher education and the academic scientific research?
Oscar Wilde answers us in *The Wings of paradox*: "Education is an admirable thing but it is good to know that nothing that deserves to be known cannot teach".

Bakunin adds in *God and the State*, "The final goal of education is to be that form of the free and full of respect and love for the freedom of others." While in Africa, the evil (harm, antivalues in education) is not denounced, disclose, admit it is kept as a moral wealth. Antivalues are planned, organized better than teaching and research.

3.1. Who complains who?

This point shows us clearly that saying "wash dirty linen in the family" that the cancer may remain in higher education:

a. **Teacher** is the center of everything. "There's no bad pupil, there's only bad teacher" if Higher Education products bad fruit instead of contributing to the development of society, contributing to the decay of society, we resorted to the teacher (master), for it is he who gives lessons, value, examines students. So it should retain its dignity to students that the authorities. 

b. **Student** is receiver, he sees what do the teacher, acquire knowledge and need a good education for its future and development of the Society. He has the right to denounce the evil and bad practices (corruption, and other antivalues) that do teachers, because close to authority academic. But the student never have the freedom of expression as his word, his complaint no longer has any effect close to staff academic and can be its own poison and his own grave (it can be sent back from the establishment despite in spirit his intelligence).

c. **Department or Faculty** is the relational center between students and teachers, it is for him to take responsibility, to question the judge concerned and according VADEMECUM (academic constitution), but clearly identified perpetrators go unpunished because of support and protections they enjoy from the high persons in the administrative hierarchy, judicial or police. Hence one has to resort to the Academic Secretariat or the Ministry of Education.

d. **Academic Secretariat** at him, he has the power to recover the hourly load or take other precautions. Often they find solutions because it is found in all the same bath.

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7 Oscar Wilde, whose full name is Oscar Fingal O’Flahertie Wills Wilde is a writer British original Irish, born in Dublin on 16 October 1854 and died in Paris on November 30, 1900.

8 Mikhail Alexandrovich Bakunin (in Russian), Frenchified in Bakunin, born on 30 May (18 May) in 1814 to Priamoukhino near Torzhok (Tver government, Russian Empire) and died on 1 July 1876 in Bern (Switzerland), is a revolutionary, theoretician of anarchism and philosopher who has paid particular attention to the role of the state. He asks in his writings the foundation of libertarian socialism.
3.2. Failure of responsibility

If the Department, the academic Secretariat cannot stop this scourge, we make use of Justice. Otherwise speaking student will have an impact and it will not have the freedom of expression at risk of unexpected and dig their own graves.

That is why a group of students is highlighted to grant freedom of expression has lost a student. Hence the group labored with the Ministry of Education, students and the institution.

3.3. Working organ remedy to these scourge

A strategy group is highlighted to address the cancer that plagues the integrity of higher and university education in sub-Saharan Africa and other countries where education is at stake this group has on students has on:

- The fight against anti-values in higher and university education
- Denouncing concerned (practicing anti-values), immoral and charge the guilty
- Recognition and publication of moral teachers, the quality of higher education institutions in sub-Saharan Africa ...
- Encouragement of students by scholarships, teachers and researchers by premiums ...

The group works in partnership with the Ministry of Higher Education, Justice, as well as other organs. Receives and transmits the information with evidence, students in the department, the department in the Secretariat, the Secretariat of the Department, the Department for Teachers.

4. Conclusion

Face the many challenges of development in sub-Saharan Africa, all the proposed summaries and reflections shows how education is a major challenge. The increasing standardization of educational policies and the significance of an education approach ignores the diversity and specificity of the constraints and historical, social, cultural, economic and demographic and technology, including African teacher should question via an adaptive modeling the problems of society.
Higher education in sub-Saharan Africa is changing techno-pedagogical shortcomings, the inability of certain diplomas to adapt the theories learned in university and higher institutes to field realities. The intellectual and moral difference between the aspiring teacher and students is very low or no full professors are often forced to repeat courses taught by assistants. Some members of the scientific body that are responsible for being not considering track lead to a doctoral thesis, which is a high performance criterion for higher education with good morals.

Some users have even questioned the foundation of the university as a scientific and educational institution. They felt that the university no longer represented what it was. The lack of an ethical exactly common motor lacking water or oil, the heating is at any time. The intrinsic value of a development education has been infested with the anti-values such as corruption, nepotism, tribalism. Teachers hold up have made teaching a second-class occupation. While higher and university education has quality human resources needed to address the problems of global society. The (1.1) relation is partial differential equation of model of ethic.

Thus the model of a good quality education in Africa will require the mobility of teachers and students, education at all levels for awareness. To denounce evil and cultivate a new mindset in the Interface application between the partners of education.

Acknowledgement

We thank the ASEAD (Academy of Science and Engineering for Africa Development) for the correction of this work, the AEDA (Association des Etudiants pour le Developpement de l’Afrique) for the moral and intellectual support, ISAU (Institut Supérieur d’Architecture et d’Urbanisme of Kinshasa) and Professor MPURU MAZEMBE BIAS for their moral and material support. We also thank the members of the Academy Tuning for their support in logistical support.
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Visual Organization of Children with Developmental Dyslexia

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ABSTRACT

Reviews suggest that developmental dyslexia (DD) has difficulty in visual organization on a complex figure copy test (ex. Rey-Osterries Complex Figure Test). In this paper, we discuss whether DD has difficulty not only copying complex figure but also unfamiliar characters copying. We administered unfamiliar characters copy task to children with normal development group and children with DD. It has tendency that the organization of a character is also bad when Organization Scoring System (OSS) score of Rey-Osterrieth Complex Figure Test (ROCFT) is bad. But the worst the OSS score of ROCFT is the person near typical development in stroke order of an unfamiliar character. It was suggested that the visual organization in a figure, and a character is not considered to be the same.

Keywords: Visual organization, Developmental dyslexia, Strange character copy

1. INTRODUCTION

In the previous work about developmental dyslexia (DD) and visual cognition, it has been reported that the inclination consciousness of a line segment and visual memory function is poor in DD (Goto, Uno et al. 2010), case with poor writing ability delays in development of vision - movement (composition) capability (Yamamoto, Notoya, 2008).

Previous literatures have been suggesting that one of the causes of writing difficulty might be due to poor visual cognition, especially visual memory and visual organization. Reviews suggest that DD have difficulty in visual organization on a complex figure copy test (ex. Rey Osterries Complex Figure Test). The organization process of a figure and a character may not be the same.

In this paper, we discuss whether DD has difficulty not only copying complex figure but also unfamiliar character copying.

2. METHOD

2.1 Participants
(1) Children with normal development group

Table 1. Profile of Children with normal development

<table>
<thead>
<tr>
<th>grade</th>
<th>mean of age of the month</th>
<th>male</th>
<th>female</th>
<th>total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>86±4months</td>
<td>24</td>
<td>21</td>
<td>45</td>
</tr>
<tr>
<td>2</td>
<td>104±4months</td>
<td>13</td>
<td>17</td>
<td>30</td>
</tr>
<tr>
<td>3</td>
<td>111±3months</td>
<td>22</td>
<td>31</td>
<td>53</td>
</tr>
<tr>
<td>4</td>
<td>123±4months</td>
<td>23</td>
<td>25</td>
<td>48</td>
</tr>
<tr>
<td>5</td>
<td>136±4months</td>
<td>24</td>
<td>21</td>
<td>45</td>
</tr>
<tr>
<td>6</td>
<td>149±3months</td>
<td>17</td>
<td>18</td>
<td>35</td>
</tr>
</tbody>
</table>

(2) Children with DD

In this study, there are four children with DD aged from eleven to twelve years old from 5th grade to 6th grade. Table 2 shows the profiles of the children with DD.

Table 2 Profile of Children with DD

<table>
<thead>
<tr>
<th></th>
<th>case1</th>
<th>case2</th>
<th>case3</th>
<th>case4</th>
</tr>
</thead>
<tbody>
<tr>
<td>grade</td>
<td>5</td>
<td>5</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>age of moon</td>
<td>134</td>
<td>143</td>
<td>147</td>
<td>151</td>
</tr>
<tr>
<td>sex</td>
<td>male</td>
<td>female</td>
<td>female</td>
<td>male</td>
</tr>
<tr>
<td>IQ</td>
<td>84</td>
<td>83</td>
<td>87</td>
<td>108</td>
</tr>
<tr>
<td>VCI</td>
<td>91</td>
<td>86</td>
<td>97</td>
<td>106</td>
</tr>
<tr>
<td>PRI (IV)</td>
<td>80</td>
<td>93</td>
<td></td>
<td></td>
</tr>
<tr>
<td>POI (III)</td>
<td></td>
<td>74</td>
<td>115</td>
<td></td>
</tr>
<tr>
<td>WMI (IV)</td>
<td>88</td>
<td>76</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FDI (III)</td>
<td></td>
<td></td>
<td>103</td>
<td>85</td>
</tr>
<tr>
<td>PSI</td>
<td>88</td>
<td>86</td>
<td>103</td>
<td>100</td>
</tr>
</tbody>
</table>

Literacy (The number of correct answers)

<table>
<thead>
<tr>
<th></th>
<th>reading aloud</th>
<th>Writing</th>
</tr>
</thead>
<tbody>
<tr>
<td>kana word(20words)</td>
<td>20</td>
<td>18</td>
</tr>
<tr>
<td>katakana word(20words)</td>
<td>20</td>
<td>17</td>
</tr>
<tr>
<td>kanji word(20words)</td>
<td>20</td>
<td>18</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>kana word(20words)</th>
<th>katakana word(20words)</th>
<th>kanji word(20words)</th>
</tr>
</thead>
<tbody>
<tr>
<td>18</td>
<td>17</td>
<td>19</td>
<td>19</td>
</tr>
<tr>
<td>7</td>
<td>3</td>
<td>6</td>
<td>6</td>
</tr>
</tbody>
</table>
2.2 Tasks and Material

(1) Unfamiliar characters copy task

We asked children with normal development group and children with DD to copy following unfamiliar characters. During copying, the process was recorded on VTR for later analysis. After the experimental session, we played back the VTR to know the way of copying the task characters. We recorded the written orders of component and directions of strokes as well.

<table>
<thead>
<tr>
<th>Character</th>
<th>①</th>
<th>②</th>
<th>③</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thai character</td>
<td>ฉ</td>
<td>จ</td>
<td></td>
</tr>
<tr>
<td>Limp character</td>
<td>பங</td>
<td>நந</td>
<td>கங</td>
</tr>
<tr>
<td>Tamil character</td>
<td>ஆப</td>
<td>பங</td>
<td>கங</td>
</tr>
<tr>
<td>Chinese simplified</td>
<td>伝</td>
<td>书</td>
<td></td>
</tr>
</tbody>
</table>

(2) Rey-Osterrieth Complex Figure Test (ROCFT)

Only children with DD served themselves as subjects of the test. The correctness score of a copy and the mark is based on the grading standard of Organization Scoring System (OSS) developed by Charvinsky et al (1992).

3. RESULTS

We classify ways of copying according to the order of strokes and the directions. Figure 1 shows the example of the standard Japanese kanji stroke order. We classify non-Japanese characters with the similar stroke order based on the similarity with the Japanese kanji stroke order as type A. Secondly similar as type B, third as type C, fourth as type D, and others E. Japanese kanji stroke order is from left to right, top to bottom as shown in figure 2.
3.1 Children with normal development group

In each character, correspondence analysis was conducted between the grade (1st–6th grade) and 5-stroke order (A, B, C, D, and E). We show the tendency correspondence analysis result shown. The stroke order changed as the grade went up. There are much C, D, and E in a low grade. It increase A and B as it became upper grade. But the Simplified Chinese character was A and B in a low grade.

Thai character ①: E(1st grade) → D(3rd grade) → C(4th grade) → B(5th, 6th grade)
Thai character ②: E(1st, 2nd grade) → D(3rd grade) → C(4th grade) → A(5th grade)
Limp character: C(1st, 2nd grade) → E(3rd grade) → A(4th, 5th grade) → B(6th grade)
Tamil character ①: D(1st grade) → E(2nd, 3rd grade) → A(4th, 5th, 6th grade)
Tamil character ②: E(1st grade) → D(2nd, 3rd grade) → C(4th grade) → A(5th grade) → B(6th grade)
Tamil character ③: C(1st, 2nd grade) → A(3rd, 4th, 5th grade) → B(6th grade)
Simplified Chinese character ①: A (1st ~ 6th grade)
Simplified Chinese character ②: B(1st grade) → A(2nd ~ 6th grade)

3.2 Children with DD

Unfamiliar character copy task: Children with DD had much A in Simplified Chinese character same as children with normal development group. In the case 1 the number of C, D and E was 2 among 6 characters (Thai, Limp, Tamil) without Simplified Chinese character. In the case 2 the number of C, D and E was 4 among the 6 characters. In the case 3, 4 the number of C, D and E was 3 among 6 characters. (Table 4) In the case 1 the number of C, D and E was few, but in the case 2, 3, 4 the number of C, D and E was many.

ROCFT: As compared with the grade average (More than a fourth grader: correctness score 30.57 ± 4.74, OSS score 36.08 ± 4.19 (Hattori, 2000, 2004), all cases were good in correctness score of ROCFT. But all cases were poor in OSS score of ROCFT. (Table 4)
Table 4 ROCFT and unfamiliar character copy task data in children with DD

<table>
<thead>
<tr>
<th></th>
<th>case1</th>
<th>case2</th>
<th>case3</th>
<th>case4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grade</td>
<td>5</td>
<td>5</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>age of month</td>
<td>134</td>
<td>143</td>
<td>147</td>
<td>151</td>
</tr>
<tr>
<td>Sex</td>
<td>male</td>
<td>female</td>
<td>female</td>
<td>male</td>
</tr>
<tr>
<td></td>
<td>Thai character ①</td>
<td>D</td>
<td>E</td>
<td>D</td>
</tr>
<tr>
<td></td>
<td>Thai character ②</td>
<td>B</td>
<td>B</td>
<td>D</td>
</tr>
<tr>
<td></td>
<td>Limp character</td>
<td>B</td>
<td>B</td>
<td>B</td>
</tr>
<tr>
<td></td>
<td>Tamil character①</td>
<td>E</td>
<td>E</td>
<td>A</td>
</tr>
<tr>
<td></td>
<td>Tamil character②</td>
<td>A</td>
<td>E</td>
<td>C</td>
</tr>
<tr>
<td></td>
<td>Tamil character③</td>
<td>A</td>
<td>E</td>
<td>A</td>
</tr>
<tr>
<td></td>
<td>Chinese simplified①</td>
<td>A</td>
<td>E</td>
<td>A</td>
</tr>
<tr>
<td></td>
<td>Chinese simplified②</td>
<td>A</td>
<td>A</td>
<td>E</td>
</tr>
<tr>
<td>ROCFT correctness score</td>
<td>36</td>
<td>36</td>
<td>34</td>
<td>36</td>
</tr>
<tr>
<td>OSS score</td>
<td>19</td>
<td>32</td>
<td>33</td>
<td>32</td>
</tr>
</tbody>
</table>

4. DISCUSSION

First, we discuss the normal development about the stroke order of the unfamiliar character. It tends to increase as A and B as a grade goes up. There is much E in an elementary school low grade. It means the stroke order is not stable. It was assumed that the stroke order of Japanese kanji character was applied in upper grade children. Because they have already learned how to write Japanese kanji character. Moreover, it was thought that Simplified Chinese character was applied the stroke order of Japanese kanji character in low grade children. Because Simplified Chinese character is similar to Japanese kanji character.

Secondly, we discuss children with DD. In case 2, 3 and 4 the OSS score was poor and there are many numbers of C, D and E in 3characters (Thai, Limp, Tamil) without Simplified Chinese character in an unfamiliar character's task too. The organization of a figure is also bad when the organization of a figure is bad. However, in the case 1, the OSS score was the poorest but there are a few numbers of C, D and E in 3characters (Thai, Limp, Tamil) without Simplified Chinese character in an unfamiliar character's task. The organization of a character is not bad even if the organization of a figure is bad. Many cases are poor in OSS of ROCFT and stop at a low-grade development in unfamiliar character copying too. Although OSS score of case 1 was the worst, there are a few C, D and E in the unfamiliar character copy task. It was suggested that the organization of a character, and a figure is not the same.

5. CONCLUSION

In previous work the badness of the organization in DD was investigated by the figure. This paper presents the stroke order types of the normal development children and children with DD. The results showed the organization of a character and a figure is not the same.
ACKNOWLEDGMENT

This work is supported with JSPS24531260.

References


**Title of submission:** Collaboration and Use of LMS in Lesson Design

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**Abstract:** During the spring of 2013, an intervention study about lesson design was conducted at a 1:1 upper secondary school. The school had an ongoing 1:1 initiative, in which the school distributed computers to the teachers and the students (1 to 1). A collaboration space on the LMS (Learning Management System) of the school was created for sharing and designing material. The objective of this study is two-fold: (1) to analyze the use and the role of the LMS for the teachers working together on a lesson design; (2) to analyze how the teachers perceived the cooperation within the group working with the lesson design.
Collaboration and Use of LMS in Lesson Design

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Abstract: During the spring of 2013, an intervention study about lesson design was conducted at a 1:1 upper secondary school. The school had an ongoing 1:1 initiative, in which the school distributed computers to the teachers and the students (1 to 1). A collaboration space on the LMS (Learning Management System) of the school was created for sharing and designing material. The objective of this study is two-fold: (1) to analyze the use and the role of the LMS for the teachers working together on a lesson design; (2) to analyze how the teachers perceived the cooperation within the group working with the lesson design.

Keywords: Lesson design, Teacher, Group, LMS, Collaborate, Sharing, 1:1, Upper Secondary School

1. Introduction

The use of modern technology is mandatory in the curricula for upper secondary schools in Sweden (The Swedish National Agency for Education, 2011). However, this is not manifested at the level of the subjects but only at the level of the program that the students attend. Over 250 municipalities in Sweden have ongoing 1:1 initiatives, which usually means that the schools distribute a computer (or a tablet) to each teacher and student (Hylén, 2013). Often the students bring more than one digital tool with them to school: the school computer and a personal mobile device (a smartphone or a mobile phone), making the school a Technology-rich environment (Ott, Haglind & Lindström, 2014). This stimulates discussion about BYOD (Bring Your Own Device). Studies have shown that although schools and teachers have access to digital technology, often the technology is only used in connection with traditional tasks, such as taking notes and writing texts. (Grönlund et al., 2011 & 2013; Hylén, 2013; Håkanson Lindqvist, 2013; The Swedish National Agency for Education, 2013; Player-Koro, Tallvid & Lindström, 2014; Haglind, 2014). National reports about the implementation of ICT in Swedish schools state that one area in need of development is teachers’ digital literacy (Grönlund et al., 2013; The Swedish National Agency for Education, 2013). A report from the European schoolnet (2013) states that “/.../ teachers often have difficulty in implementing ICT into T&L (Teaching and Learning), despite having access and positive attitudes towards it, and therefore require support not only from technical point but also support from the pedagogical perspective” (p.89-90). Godhe (2014) states that it is important to understand the possible uses of digital tools in relation to the terms and conditions within a school setting.

1.1 Problem area

Studies have shown the importance of teachers working together in order to develop their pedagogical use of ICT. (ITL, 2011; Chaib, C., Chaib, M. & Ludvigsson, A., 2004). The ITL report, “Innovative teaching and learning research: Findings and implications”, indicates that collaboration is a key factor for education in today’s technological society. The report indicates the need for “Teacher collaboration that focuses on peer support and the sharing of teaching practices” and for “Professional development that involves the active and direct engagement of teachers, particularly in practicing and researching new teaching methods” (p.12). Hattie stresses “the power of teachers learning from talking to each other about planning” (Hattie, 2012).

The use of an LMS (Learning Management System) is something that is often pointed out as one of the benefits of 1:1 initiatives, since the LMS is an important part of the school’s digital infrastructure.
national agency for education states that it is important for teachers to reflect on their own teaching and to collaborate with other teachers (The Swedish National Agency for Education, 2012). According to Pilerot (2013), trust is both a condition and a result of sharing. Buckley (2012) states that trust is a crucial knowledge issue and that trust is something that needs to be built within a new group. Buckley also states that sharing needs to be a norm and not an exception, in order to increase both the habit and the will to share material and information between colleagues. Fullan and Langworthy (2014) states that “a collaborative climate decreases teacher isolation and, at the same time, enables greater risk-taking” (p.54).

The objective with this study is two-fold: (1) to analyze the use and the role of the LMS for the teacher group working together on a lesson design; (2) to analyze how the teachers perceived the cooperation within the group working with the lesson design.

2. Method

The project was an intervention study about lesson design with integrated ICT. It was optional for the teachers to participate in the study. All of the teachers in the subject of Swedish language at the school were given the opportunity to participate. Six teachers of Swedish language at an Upper secondary school worked together for four months designing and implementing the lesson design. Several data collections were made during the project, both quantitative and qualitative. Six classes (in total 139 students) were involved in the project. The teachers in the group, two males and four females, worked on different programs at the school. The teachers had different levels and types of experience of using ICT and computers in the classroom. Some of the teachers stated that they usually incorporate the computer and ICT in their teaching, but some of them said that they seldom do, but that they wish to do it more. The teachers in the project stated that they wanted to join the group for two reasons: (1) to learn more about ICT and how it can be used in the classroom (2) to get time to work with ICT, together with their colleagues.

The group of teachers in the study was introduced to the TPACK model (Koehler & Mishra, 2009) as inspiration for reflecting upon digital technology and lesson design in new ways. They were also urged to ask two questions frequently.

Could this have been done without a digital tool?
Is this a task that demands a digital tool to solve?

For this paper, data from three data collections were used: logged LMS activity; teacher interviews; and a group evaluation with the teachers at the end of the project. Form the group evaluation, the following questions were used.

How do you perceive the working process for this project?
What could have been done even better and how?

From the teacher interviews the following questions were used.

What is your opinion about being a part of this group and how do you think is has been?
What advantages and disadvantages are there to working in a team?

The teacher interviews and the group evaluation were digitally recorded and transcribed using Inqscribe.

2.1 LMS activity

The school in the study used an LMS as part of the digital infrastructure. A collaboration space on the LMS was created for the group before the first group meeting. The space was used to collect, share and create material within the group. It was also used for handling information within the group.

Throughout the project, LMS activities were logged. An LMS activity is defined here as an activity on the LMS, e.g., the material that was uploaded on the LMS was logged, according to the criteria: what kind of material; who shared the material; and who used the material. One of the objectives of the project was to make the lesson design as digital as possible, and one way of doing this was to place all of the material, both for the teachers and the students, on the LMS.
2.2 Share/Sharer and Use/user

In this study, the words ‘share’ or ‘sharer’ were used to indicate that the teacher uploaded the material on the LMS, and the words ‘use’ or ‘user’ were used to specify that the teacher had used the document. The system only makes it possible to determine whether or not the documents have been opened. The term ‘use’ and ‘user’ were selected because it is assumed that looking at a document (even though not actively using it in his or her individual space) may give rise to thoughts and inspiration for the teacher, which was confirmed in the teachers’ interviews.

3. Results

The findings of the study are presented in two steps in this paper. First, the teachers’ reflections about working in the group are presented, teacher by teacher. Second, the activity on the LMS is presented. See Appendix 1 for a complete log of the activities.

3.1 The teachers’ reflections

Teacher 1 (T1)

T1 thought that the cooperation within the group was good and she pointed out that they have discussed and shared material. She stated that sharing material saved a lot of time and that it has been “a good thing” to work together designing the task for the students. She also thought that the work in the group has been “good” but states that she could have been more active herself by giving to and sharing with the group. T1 thought that everybody in the group contributed something, that the members of the group complemented each other and that it was a “good” cooperation. T1 also thought that it was useful to listen to how the others in the group thought, and to reflect upon whether that way would suit her and her students (Interview Teacher 1, 2013-06-17).

Teacher 2 (T2)

T2 thought that the project had been “a lot of fun”. She stated that being in the group gave them the opportunity to take time to do things that they wouldn’t have done otherwise. She pointed out that the project involved teachers from different programs and that she got the chance to work with other colleagues than she usually does. T2 talked about the value of the informal meetings in the hallway, where the group members had talked to each other, giving each other advice or just checking out how the process was going in their classrooms (Interview Teacher 2, 2013-06-11).

Teacher 3 (T3)

T3 reflected that in the beginning of the project, the members in the group were silent, and because of this, it took time before the group was productive. “At the beginning we just let time go without doing anything, and it felt like many were afraid to say what they thought, and then I became silent and did not say much”. At the end of the project, the teacher felt that it had been a “very good” group and that she wished that the group could continue to work together. She stated that she got many ideas and that it was useful to see how others work and think (Interview Teacher 3, 2013-06-17).

T3 also state that it was very positive that the members in the group shared material and that this saved a lot of time. For example, she states that is has been very useful to look at the material in the LMS and think about what parts of the material she could use for her own students (Group evaluation, Teacher 3, 2013-06-17).

Teacher 4 (T4)

T4 stated that it had been a good experience to be in the group, that it’s very rare that the teachers get the chance to design lessons together in such a large group, and that it has given them new thoughts and ideas. “The project has been both good and useful”. She stated that in the beginning, one could feel a bit afraid to say something in the group, but after some time that feeling disappeared. T4 also stated that although the teachers knew each other before, they hadn’t worked together that closely, at least not in that group constellation (Interview Teacher 4, 2013-06-13).
**Teacher 5 (T5)**

T5 expressed that it has been a very “nice” and open group, where issues could be discussed in a “good” way. He considers it to be a productive way to get new ideas.

T5 also stated that there was a generous attitude in the group and that the members in the group were willing to share their material in an open way (Interview Teacher 5, 2013-06-13).

**Teacher 6 (T6)**

T6 found it enriching that the members in the group have different backgrounds and knowledge. He also stated that without the group, the project would have “impossible”. According to T6, feeling the support from the rest of the group has been very important.

“I have experienced the support, and sometimes you just experience a support in that there is a group, not necessarily in order to provide support, but that so that one is not alone, because there has been a lot of uncertainty, at least inwardly, about how should we assess this? And then it is very important to be a group” (Interview Teacher 6, 2013-06-13).

T6 stated that the cooperation in the study has been rather different from the usual cooperation between colleagues. He expressed that he has appreciated the group very much and thinks that working in groups like this - where teachers have time to design and work together more systematically - should become the common way of working, in contrast to working alone as is the most common way of working. T6 also expressed that his work wouldn’t have been quite as good without the rest of the groups’ material and that it made work easier. He stated that he could have been more active himself by giving to and sharing with the group. (Group evaluation, Teacher 6, 2013-06-17).

### 3.2 The LMS activity

A total of 53 documents were uploaded in the collaboration space on the LMS during a period of four months. Six different types of material were uploaded: Doc/docx/word (15); Links (10); Pdf (10); Wmv (1); Png/gif/ipg (13) and Ppt/pptx (4). Some of the material was created during the meetings, for example, the examination instruction for the students, and then uploaded by one of the members in the group.

All of the documents are numbered from 1-53 (see Appendix 1), so it can be seen which teacher uploaded the document, which teacher used which document, and in what order they were used. 0 means that the person shared the document on the LMS, 1 = first user, 2 = second user, 3 = third user and so on. The number 99 indicates that the teacher did not use or upload the document from the LMS. Table 1 shows the distribution of the materials. Looking through the material units without using them in their individual LMS is considered to be ‘use’, since they have used it for inspiration or for planning the design. In the column, “User”, the number of documents from the collaboration space is shown. These are the documents that the teachers in the group shared and saved with each other on the LMS, and that were used in a single teachers “individual space”, where the teachers share and save material for their own class.

<table>
<thead>
<tr>
<th>Sharer (0)</th>
<th>1</th>
<th>2</th>
<th>3</th>
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Looking at the LMS activity, several patterns can be seen and conclusions can be drawn. Teacher 2 is the one who shares the most, while Teacher 4 has the highest rate of being the first user, and Teacher 3 has the highest rate of being the second user. These three teachers are also the most active teachers on the LMS. Teacher 2 and Teacher 3 have used 52 of 53 documents. Teacher 1 used some of the material in the following year (2014), but in this study, this is marked as 99. There is more material in the group LMS than is being used in the teachers’ individual spaces. Teacher 6 has 8 material units in his individual LMS, and all of them are from the group LMS.
Looking at the activity of Teacher 5 on the groups LMS, it seems that he has used 9/53 material units, but looking at Teacher 5’s individual LMS, it can be seen that he has 25/53 of the documents stored there for the students. This is important to point out, because otherwise one can get the impression that he did not use the material on the LMS.

The material has also been shared on different occasions: during the meetings, by email, but also when the group members have met on informal occasions.

4. Discussion

The teachers shared 53 unique files/pieces of material. These were in different forms of material or material types: YouTube clips, pictures, word documents, links, PowerPoints, scanned documents, such as newspaper articles, and excerpts from literary texts. The LMS activity shows who contributed which material, who looked at the material, and so forth. Following the tracks on the LMS, it is clear that part of the lesson design was built elsewhere, and only not during the group meetings. The LMS maintains the group, even when they do not meet physically. This LMS material bank saved time for the teachers, and for some of them, it was comforting to know that others had the same experience. The teachers in the group used and related to the shared material in different ways. Similarly, being part of a group and participating in the joint design have been different experiences for the individual teachers.

Creating a lesson plan together with colleagues gave them the opportunity to both create new material and to share previously used material. The material that was used in the lesson design was material that the group or parts of the group created during the teachers meetings, as well as material that a teacher had used before and shared with the group.

Material for the design was shared on the LMS, on email, and during the group meetings. There were also more informal meetings where the design was both discussed and ideas shared, such as in the hallway, in the coffee room or by the copy machine.

The school in the study encourages teachers to share lesson plans, tests and other forms of teaching material. The reasons for this are at least three-fold: equivalence, time-saving, and the value of peer cooperation. The group members in the study talked about these values. They discussed that it takes time to build a group that works well together and that it is important to feel secure and to feel trust within the group. These findings comply with the findings of both Pilerot (2013) and Buckley (2012). To share, create and discuss problems along the way were pointed out by the group as very important aspects of the activity. The members in the group had different levels of digital competence and were used to working with ICT in their teaching on different premises. Showing and teaching the rest of the group how they use ICT became an important element within the group, for example, how to record a movie for a flipped classroom or how to transfer sound from a mobile phone to a computer.

The TPACK model (Koehler & Mishra, 2009) provided an extra dimension of the discussion by raising the question of whether the design of the lesson plan could have been implemented (solved or done) without digital tools. The dilemma was also a source of frustration in the beginning, when the participants sometimes felt that they needed more input to raise their technological or digital competence. However, working together in the group, sharing their knowledge, and searching and trying out new things together all contributed to the making the project successful.

Their curriculum (The Swedish National Agency for Education, 2011) emphasizes that their teaching should be based on a disciplinary foundation and on proven experience (best practice). The teachers used both of these foundations to design the lesson plan, and the LMS became the place where both could be combined. The material bank (on the LMS) was build up from both previously used material and new material created with digital technologies.

The findings of this study also indicate that the LMS has other functions then just transporting material from one person to another. The teachers stated the benefits of browsing the LMS for material, because this gave them the opportunity to reflect on their own and others’ material and on others’ methods of teaching, and they said that they learned a great deal from this.

In accordance to other studies and reports (ITL, 2011; Chaib, C., Chaib, M. & Ludvigsson, A., 2004; The Swedish National Agency for Education, 2012), collaboration is identified as a key factor. The collaboration contributes to both feelings of trust and comfort and to create learning opportunities which combines both disciplinary foundation and proven experience.

---

1 A flipped classroom is a concept in which more time is spent at home learning the facts and more time is spent at school processing the facts. One way of doing this is for the teacher to record a movie about the content for the students to view at home.
References


## Appendix 1

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1. Title: Pragmatic Competence and Acquisition of Rhetorical Questions

2. Name: Akemi Matsuya, Ph.D.

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4. Address: 2-19-1 Ohmiya, Suginami-Ku, Tokyo 168-0146 Japan

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Pragmatic Competence and Acquisition of Rhetorical Questions

Akemi Matsuya
Takachiho University

1. Introduction

Rhetorical questions (RQs) have been vigorously disputed in syntactic, semantic, and pragmatic research: can RQs be treated on par with ordinary questions (OQs)? The object of this paper is to show how children acquire rhetorical questions in Japanese, especially analyzing the data on ‘nani,’ which corresponds to ‘what’ in English, from the data base CHILDES. The current study focuses on the following questions.

(1) Research Questions
   a. Is the acquisition of RQs later than that of ordinary questions OQs?
   b. What is the cause of the delay of the acquisition of RQs?
   c. Does Common Ground (CG) play an important role in the acquisition of RQs?

Section 2 will briefly review previous studies concerning RQs. Section 3 will show the data from CHILDES with respect to RQs, OQs, and negative statements (NSs) and analyze them. Section 4 will discuss the results from the CHILDES. Section 5 will state concluding remarks.

2. Previous Studies

The preceding studies pertaining RQs are mainly divided into two views. One distinguishes RQs from OQs (see Sadock 1971; Han and Siegel 1996; Han 2002). The other claims that RQs behave like OQs (see Caponigro and Sprouse 2007).

2.1 Previous Studies (1): RQs ≠ OQs

Sadock (1971) suggested that RQs have the illocutionary force of a strong assertion of positive polarity, citing (2): the underlined positive RQ is equal to a negative assertion, an NS. Han (2002) proposes that the wh-phrases of RQs are

* This study is supported by JSPS Grant-in-Aid for Scientific Research (C) (23520703). My special thanks go to Patricia Hironymous for her helpful comments and suggestions. All remaining errors are mine.
licensed at post-LF derivation as negative quantifiers. Ladusaw (1979) and Gutiérrez-Rexach (1997) state that RQs are the OQs, which cannot be answered or can receive only negative answers.

(2) Student: Your theory predicts that “Furiously sleep ideas green colorless” is grammatical.

Teacher: I should be allowed a few small errors. After all, is syntax easy? [= Syntax isn’t easy.]

Sadock (1971:226)

2.2 Previous Studies (2): RQs $\equiv$ OQs

Caponigro and Sprouse (2007) claims that RQs behave similarly to OQs semantically as well as syntactically but differently pragmatically. They present evidence that RQs are not equivalent to statements, which do not require the answer as in (3b). In (3a), Speaker or Addressee can give the answer to the RQ.

(3) a. Speaker: You should stop saying that Luca didn’t like the party last night. After all, who was the only one that was still dancing at 3am?
Addressee or Speaker: Luca.

b. Speaker: You should stop saying that Luca didn’t like the party last night.
After all, Luca was the only one that was still dancing at 3 am!
Addressee or Speaker: #Luca.

Caponigro and Sprouse (2007:124)

Based on CG as a set of propositions presenting what the participants should share and believe in a discourse, they suggest Speaker’s Beliefs (SBs) (4), Addressee’s Beliefs (ABs) (5), Common Ground$_{S-A}$ (CG$_{S-A}$) (6). In addition, they present the conditions, which RQs and OQs must comply with, as in (7) and (8), respectively. Item (7) states that a question Q is defined as an OQ under the case that the answer is not among the SBs. In other words, when the speaker does not have any knowledge to the complete true answer to it, the question is not treated as an OQ. Item (8) expresses the idea that a question Q can be a RQ if the answer is a part of the CG$_{S-A}$: when both the Speaker and the Addressee share the true complete answer to it, the Q is regarded as an RQ.
From their pragmatic perspective of RQs and OQs,\(^1\) I will discuss the retrieved data from CHILDES.

\(^1\) Caponigro and Sprouse (2007) states their revised definitions of RQs and OQs as follows.

(i) Definition of OQs:
An OQ is an interrogative clause whose answer is not known to the Speaker, but the Speaker thinks the Addressee may know it. An answer is required in order for the dialogue to be felicitous. Only the Addressee can answer.

Caponigro and Sprouse (2007:129)

(ii) Definition of RQs:
An RQ is an interrogative clause whose answer is known to the Speaker and the Addressee, and they both also know that the other knows the answer as well. An answer is not required, but possible. Either the Speaker or the Addressee can answer.

Caponigro and Sprouse (2007:129)
3. CHILDES Data

3.1 RQ Input

The results of the search regarding RQ input and output are shown below. Although the people around these children gave them more RQ as stimuli than expected, the output of RQs cannot be found.

(9) a. RQ input age

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b. RQ Input Examples

(i)  326  %act: walking to the window
      327  %tim: 00:10:20
      328  *CHI: cha .
      329  %act: looking out
      330  *FAT: un ?
          ['What ?']
      331  *FAT: nani ga mien [: mieru] no ?
          ['What can you see ?']
      332  *FAT: a , buubuu@o (ga) nai wa , moo .
          ['There is no cars .']
      333  %tim: 00:10:30
      334  *FAT: buubuu@o (wa) baibai shita .
          ['The car has left .']

          Ishii/10011.cha

(ii) 71  *CHI: a a .
      72  %xmor: co:i|a co:i|a .
      73  %act: takes out Fisher Price plane,
3.2 OQ Input and Output

As (10a) depicts, the average of input age of OQs is around one year earlier than that of RQs. Children also seem to output OQs about four months after the input of OQs as seen in (10c).
(10)  a.  OQ Input Age

<table>
<thead>
<tr>
<th>file #</th>
<th>targeted child's age</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hamasaki/tar21.cha</td>
<td>2:11.11</td>
</tr>
<tr>
<td>Ishii/10829.cha</td>
<td>1:08.29</td>
</tr>
<tr>
<td>MiiPro/ArikaM/aprim19990515.cha</td>
<td>3:00.02</td>
</tr>
<tr>
<td>MiiPro/Asato/ak19990618.cha</td>
<td>3:00.01</td>
</tr>
<tr>
<td>MiiPro/Nanami/njd19980116.cha</td>
<td>1:07.01</td>
</tr>
<tr>
<td>MiiPro/Tomato/tom19990528.cha</td>
<td>2:11.27</td>
</tr>
<tr>
<td>Miyata/Aki/aki18.cha</td>
<td>2:02.14</td>
</tr>
<tr>
<td>Miyata/Ryot11012.cha</td>
<td>1:10.12</td>
</tr>
<tr>
<td>Miyata/Tat/0931007.cha</td>
<td>1:05.27</td>
</tr>
<tr>
<td>Noj/200.cha</td>
<td>2:00.00</td>
</tr>
<tr>
<td>Ota/Kenta/k09.cha</td>
<td>1:09.26</td>
</tr>
<tr>
<td>Ota/Takeru/t08.cha</td>
<td>1:09.05</td>
</tr>
</tbody>
</table>

mean age 2:2.11

b.  OQ Input Examples

(i)  MOT:  sore nani ?
    ['What is it?']
    Hamasaki/tar01.cha/line 57

(ii)  FAT: nan [: nani] deshu [: desu] ka ?
    ['What is this?']
    Ishii/000601.cha/line 127

(iii)  MOT: kore nani, kore ?
    ['What is this?']
    MiiPro/Nanami/njd19970813.cha/line715

(iv)  AMO: ato nani ga suki kanaa?
    [What else do you like?]
    Miyata/aki01.cha/line58
c. OQ Output Age

<table>
<thead>
<tr>
<th>file #</th>
<th>targeted child's age</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hamasaki/tar21.cha</td>
<td>2;11.11</td>
</tr>
<tr>
<td>Ishii/10829.cha</td>
<td>1;08.29</td>
</tr>
<tr>
<td>MiiPro/ArikaM/aprim19990515.cha</td>
<td>3:00.02</td>
</tr>
<tr>
<td>MiiPro/Asato/als19990618.cha</td>
<td>3:00.01</td>
</tr>
<tr>
<td>MiiPro/Nanami/njd19980116.cha</td>
<td>1;07.01</td>
</tr>
<tr>
<td>MiiPro/Tomito/tom19990528.cha</td>
<td>2;11.27</td>
</tr>
<tr>
<td>Miyata/Aki/aki18.cha</td>
<td>2;02.14</td>
</tr>
<tr>
<td>Miyata/Ryo/r11012.cha</td>
<td>1;10.12</td>
</tr>
<tr>
<td>Miyata/Tai/931007.cha</td>
<td>1;05.27</td>
</tr>
<tr>
<td>Noji/200.cha</td>
<td>2;00.00</td>
</tr>
<tr>
<td>Ota/Kenta/k09.cha</td>
<td>1;09.26</td>
</tr>
<tr>
<td>Ota/Takeru/t08.cha</td>
<td>1;09.05</td>
</tr>
</tbody>
</table>

mean age 2;2.11

---

d. OQ output examples

(i)  TOM: Honochan ni [*] nani ga haitte (i)ru no ?
     ['What is in Honochan?']
     MiiPro/Tomito/tom19990528.cha/line277

(ii) *CHI: nani ?
     ['What?']
     Miyata/Ryo/r11012.cha/line2336

(ii) *SUM: nani ?
     ['What?']
     *OTH: oshikko ?
     ['Do you need to go potty?']
     *SUM: shikko nai yoo .
     ['I don’t go potty.']
     Noji/200.cha/line 1316
3.3 NS Input and Output

As seen in (11a) and (11c), it is a little surprising that the average age of NS input is the latest among three constructions, although the average age difference between RQs and NSs is only one month. In addition, the input and output NS samples are small in number. It takes around six months for the targeted children to produce NSs after receiving the input.

(11) a. NS Input Age

<table>
<thead>
<tr>
<th>file #</th>
<th>targeted child's age</th>
<th>addresser</th>
</tr>
</thead>
<tbody>
<tr>
<td>MiiPro/ArikaM/aprm19990707.cha</td>
<td>3:01.24</td>
<td>mother</td>
</tr>
<tr>
<td>MiiPro/Tomito/tom20001002.cha</td>
<td>4:04.01</td>
<td>mother</td>
</tr>
<tr>
<td>MiiPro/Nanami/njd19970813.cha</td>
<td>1:01.29</td>
<td>mother</td>
</tr>
<tr>
<td>Miyata/Aki/aki10.cha</td>
<td>2:00.19</td>
<td>mother</td>
</tr>
<tr>
<td>Miyata/Kyoro.cha.11109.cha</td>
<td>1:11.09</td>
<td>elder sister</td>
</tr>
<tr>
<td>Miyata/Tai/i931007.cha</td>
<td>1:05.27</td>
<td>mother</td>
</tr>
<tr>
<td>Noji/304.cha</td>
<td>3:04.00</td>
<td>mother</td>
</tr>
</tbody>
</table>

mean age 2:5.29

b. NS Input Examples

(i) MOT: (1)nanimo [?] (1)nai no ?
    ['Is there nothing?']
    MiiPro/ArikaM/aprm19990707.cha/line 3541

(ii) MOT: (1)nan:imo (1)nai yo hora .
     ['See, there is nothing. ']
     MOT: nan:imo nai .
     ['Nothing is here. ']
     MOT: nainai yo .
     ['Nothing. Nothing. ']
     MiiPro/Nanami/njd19970813.cha/line 2146

(iii) MOT: ii mo no wa (1)nanimo (1)nai ne [% 2].
     ['There is no good thing. ']
     SUM: omamesan katte kite agyoo [% 3].
     ['I will buy something for you. ']
     Noji/304.cha/line 1505
c. NS output age

<table>
<thead>
<tr>
<th>file #</th>
<th>targeted child's age</th>
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</thead>
<tbody>
<tr>
<td>MiiPro/ArikaM/aprm19990707.cha</td>
<td>3:01.24</td>
</tr>
<tr>
<td>Miyata/Aki/aki20914.cha</td>
<td>2:09.14</td>
</tr>
<tr>
<td><strong>mean age</strong></td>
<td><strong>2:11.21</strong></td>
</tr>
</tbody>
</table>

d. NS output Example

(i) APR: moo (1)nanimo (1)nai .
    ['Nothing is here.‘]
MOT: nanimo [?] nai no ?
    ['Is there nothing?‘]

MiiPro/ArikaM/aprm19990707.cha/line 3538

(iii) CHI: (1)nanimo (1)nai no .
    ['Nothing is here.‘]
Miyata/Aki/ aki20914.cha/line 1228

To recapitulate, the ages of input of the three constructions are ordered as follows: OQ input (1:01.06)  RQ input (2:04.06)  NS input (2:05.29). Children utter OQs earlier than NSs: OQ output (2:02.11) and NS output (2:11.21). Compared with NSs, it seems to take less time for children to acquire OQs: four months in OQs and six months in NQs. Additionally, only two examples of NP output were found.

4. Discussion

As reviewed in section 1, the pragmatic condition, CGS-A, is indispensable in distinguishing RQs from OQs. The results of CHILES with respect to the input and output of RQs and OQs show that children might acquire OQs earlier than RQs because the former do not need to have CG among children and their parents and caregivers. In other words, the acquisition of RQs might be connected to the development of pragmatic competence. This outlook is supported by Akhtar and Herold’s (2009) remarks, (12a) and (12b) on the strong association between linguistics and pragmatics competences. (12c) implies that it takes time for children to acquire the pragmatic condition such as CGS-A, which delays acquisition of RQs.
(12)  a. “--- that some longitudinal studies have found positive correlations between measures of pragmatic development and grammatical development, ---”
    Akhtar and Herold (2009:406)

b. “--- they [=children] are paying attention to the pragmatic contexts in which those words and constructions are used, and they use the ones that best fit their communicative goals within the constraints of the cultural context.”
    Akhtar and Herold (2009:406)

c. “As young preschoolers are generally more egocentric than older children, their contributions to conversations are not always relevant, and may not provide enough information in a clear manner to their conversation patterns.”
    Akhtar and Herold (2009:407)

5. Concluding remarks
   It might be more difficult for young children to acquire the pragmatic rule, CGS-A, than older children, which in turn causes the slower progress of the input and output of RQs. Parents and caregivers, who notice the difficulty, may hesitate to input RQs into children. It is evident that older children can produce RQs more frequently than younger preschoolers

References
Ladusaw, W.: 1979, Polarity sensitivity as inherent scope relations, Ph.D. dissertation, University of Texas at Austin.
Han, C.: 2002 Interpreting interrogatives as rhetorical questions. Lingua 112, 201-229.
Data Resources


1. Title: Student Research Questions: Moving from the Rhetorical to the Actual

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6. Abstract
For most, but especially for developmental or basic skills English students, developing a research question is not intuitive. While many students have a basic understanding of what a thesis statement is and why it is important, most do not differentiate a thesis statement from a research question. A thesis statement is the core argument a writer makes regarding a position. It is the main point that is to be supported by textual evidence from sources along with the interpretation of that evidence on any given topic. However, a research question is akin to a hypothesis as it does not provide a definitive answer from the outset. In the instruction of information competency, defined as an ability to find and evaluate sources for reliability, authority, credibility, and appropriateness, and then to be able to use this information in an ethical manner, the research question provides focus and scope to a research project and acts as a compass by which information can be searched objectively and neutrally. Research guided by a research question prevents privileging of information that supports a “my side” perspective. The research question is not one that can be easily answered but provides an opportunity for a position to be modified or even reversed; it keeps the researcher open to the possibility of alternative, and even contradictory perspectives. This presentation will discuss how to apply a formula for constructing an effective research question in order to foster better research and critical thinking skills.
Abstract
Developing Style: Rhetorical Questions in ESL Student Writing

Patricia C. Hironymous, Ph.D.
Glendale College

English as a Second Language (ESL) students are often required to take pre-freshman level composition courses in order to improve their academic writing. Before coming to these courses, ESL students have spent years studying grammar, often in both their native countries and in the United States. While they may have control of English grammar, they usually have difficulty developing a writing style, particularly a more sophisticated tone and voice. How can we help to develop this elusive notion of style for ESL student writers? One way we can help accomplish this is to introduce the use of rhetorical questions. Most ESL students are unaware that these can be an effective tool in academic writing to engage and guide the reader, and that this in turn elevates the tone and voice of the writer. A good place to begin instruction of rhetorical questions is to teach ESL students about using these as transitions in the body paragraphs; rhetorical questions can be used in or near topic sentences of paragraphs to transition to new ideas, highlight imminent definitions, or act as illustrative markers for supporting sentences. These uses of rhetorical questions can be practiced within the five paragraph essay, a pattern that ESL students are usually familiar with at the pre-freshman composition level. After practice with rhetorical questions as structural transitions in body paragraphs, ESL students can learn to use rhetorical questions in other areas of the essay structure. A typical essay introduction style often called the funnel can be challenging for ESL students. In the funnel approach, writers move from a general opening sentence down to the thesis, narrowing each successive sentence in between. Even after extensive practice with this approach, ESL student writers can still have difficulty finding connections from one sentence to the next, often producing choppy, unrelated strings of sentences, with the thesis finally arriving almost as a surprise. How do rhetorical questions fit into this? In the introduction, these can be used as the opening sentence, to help ESL writers focus on where they are going and to capture the reader’s interest, as links between ideas in successive sentences, and as a lead in to the thesis statement. ESL student writers can also practice incorporating rhetorical questions effectively into argument essays, particularly within a counterargument-refutation paragraph. Rhetorical questions take on their most classical use here in that they call on the reader to consider or act on an issue, focus on key weaknesses in the counterargument, and/or question the validity of premises. While native speakers of English can have general, tacit knowledge of how to use rhetorical questions in writing, ESL students must have overt instruction and meaningful practice with them. Effective teaching of rhetorical questions in pre-freshman composition courses can help to improve the tone of an academic essay and develop the voice of the ESL student writer.
1. Title: You Didn’t Come Here for Answers: The Use of Rhetorical Questions in Tutoring

2. Name: Shant Shahoian

3. Affiliation: English Division, Glendale College

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6. Abstract
Every semester, students flock to the Writing Center at Glendale Community College fully expecting professional editors and proofreaders to comb through their essays with aplomb, deftly transforming rough drafts into refined prose. In short, they come to the Learning Center for answers to all their questions; however, a great tutor will pose many more questions than she will provide answers. While major accrediting bodies like the College Reading and Language Association (CRLA) and the National Tutoring Association (NTA) are correct to advocate using probing or leading questions as a primary scaffolding tool, the use of rhetorical questions is also effective in helping students reach their potential. Student and faculty tutors in the Writing Center are encouraged to use rhetorical questions – including *pysma*, *hypophora*, and *anacoenosis* – in their sessions with tutees. After each tutoring session, the tutor and tutee separately assess the session. The data from these tutor logs and tutee surveys, along with informal interviews with tutors and tutees, suggest that, when employed strategically, the implementation of rhetorical questions by both tutors and tutees improves the outcomes of brainstorming sessions, reduces student anxiety, and increases the tutor’s credibility while minimizing dissonance. The selective use of rhetorical questions in tutoring sessions will help students succeed and bolster the mission of any student-centered tutoring service.
MAVEN: An Exploration of Mars
Incorporating the MAVEN Mission Into Your Curriculum

Topic Area: Science Education
Presentation Format: Workshop

DESCRIPTION OF PRESENTATION

Studying Mars is an important piece of science education because in analyzing the characteristics of Mars, we are able to better understand our own planet. The findings from the MAVEN mission, which is orbiting Mars at the time of this conference, will open a new chapter in science education. Through hands-on activities relating to magnetism, habitability, and planetary scale, educators will leave this session with lessons and resources to incorporate MAVEN into their own curriculum.

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Ambassador,
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MAVEN: An Exploration of Mars
Incorporating the MAVEN Mission Into Your Curriculum

**ABSTRACT** MAVEN: Mars Atmosphere and Volatile Evolution, is the first mission to Mars dedicated to studying the Martian upper atmosphere. The goal of MAVEN is to determine the role that loss of atmospheric gas to space played in changing the Martian climate through time. Where did the atmosphere – and the water – go, and how does this knowledge influence our understanding of our own planet’s atmosphere? MAVEN Educator Ambassadors (MEA) are educators trained in inquiry based, hands-on, NASA approved lessons that demonstrate magnetism, spectroscopy, planetary scale, planetary habitability, the Engineering Design Process, Earth/Mars landscape characteristics, and heliophysics as they relate to the Earth’s atmosphere and Mars’ atmosphere. In this workshop, participants will be exposed to many of the MEA lessons in these content areas, as well as be shown where to find additional resources related to the MAVEN mission. Participants will be able to play the role of the student, testing out many of the hands-on activities and learning how to incorporate the lessons into their curriculum. This is a great workshop for classroom teachers, as well as informal educators, as many of the lessons could be adapted into a class unit or into informal programming; i.e. summer camps or workshops.
Attitudes of EFL learners towards the use of text, audio and learner control in a multimedia instructional program

Ana M. Enciso Bernal\textsuperscript{a}, Brian C. Nelson\textsuperscript{b}, Robert K. Atkinson\textsuperscript{b}, and Wilhelmina Savenye\textsuperscript{c}

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\textsuperscript{b} School of Computing, Informatics, and Decision Systems Engineering, Arizona State University, Tempe, AZ, USA
\textsuperscript{c} Mary Lou Fulton Teachers College, Arizona State University, Tempe, AZ, USA

ABSTRACT

The study investigated the effects of concurrent audio and equivalent onscreen text, as well as their relationship with learner control, on the attitudes of learners of English as a foreign language (EFL) to form associations between textual and aural forms of target vocabulary words in the context of a computer-based multimedia instructional program. The research questions investigated were (1) what is the impact of different types of text (i.e. full and keyword), presented in combination with equivalent audio in a multimedia instructional program on attitudes toward the treatments? And (2) what is the impact of learner control in a multimedia instructional program on attitudes toward the treatments? A total of 200 college students took part in the study. Participants were randomly assigned to experimental conditions in a 2 x 3 factorial design with level of learner control (learner-controlled vs. not-learner-controlled) and format of presentation of information (audio + no text vs. audio + full text vs. audio + keyword text) as factors. The subjects completed an attitude questionnaire. Results revealed the following findings: (a) overall, subjects had positive attitudes towards the treatments; (b) the majority of participants acknowledged the use of concurrent audio and text as the preferred instructional approach to accomplish text-sound association in EFL; (c) full text groups felt significantly more positive towards the use of concurrent audio and text than keyword text groups; (d) significant differences were found between the audio + keyword text and audio + no text groups, indicating that subjects in the latter had significantly more positive attitudes towards the use of learner control.

\textit{Keywords} Instructional Design/Development, Instructional Technology, ESL/ENL
Abstract

This paper presents findings from two professional development (PD) cohort-based programs dedicated to improving mainstream teachers of English Learners (ELs) in a restrictive language state. The paper presents the results of two companion programs serving primarily math, science and English secondary teachers in five school districts. Teachers instruct ELs in mainstream classrooms in districts where a majority are Spanish first language speakers and lowered socioeconomic status. The two professional development programs seek to bolster teachers’ existing knowledge, skills and dispositions for teaching ELs using a professional development ESL curriculum. The analysis of data of six cohorts support that teachers report awareness of the linguistic and cultural facets of culturally relevant teaching however implementation requires embedded opportunities for supportive practice.

Introduction

When Prop 203 was implemented in 2006, the Arizona context of restricted language policy and state mandated policy for Structured English Immersion (SEI) (A.R.S § 15-756.01) shifted teacher education programs. The Arizona context over
teacher preparation requires that all teachers meet the minimum state
requirements for instruction of English language learners - 90 credit hours of
Structured English Immersion training. Through Prop 203 all instruction in Arizona
schools is English-only including those students in an English language development
classroom. The Arizona context of restricted language policy and governance over
teacher preparation for ELs has impacted teacher preparation for ELs through an
SEI endorsement. Arias (2012), posits that teacher preparation which simply meets
state’s SEI instruction requirements inadequately prepares teachers to meet EL
students’ needs; suggesting that teachers’ of ELs who have an SEI endorsement may
actually have a knowledge and skills gaps. A lack of preparation not only places
teachers in a capacity gap, but similarly a lack of requisite knowledge, skills and
affirming perspectives undermines the success of long term and/or reclassified ELs
who are still mastering academic content and learning English. Arizona SEI training
is heavily focused on strategies and does not strive to bolster requisite knowledge,
skills and affirming dispositions (Markos & Arias, 2014). According to de Jong and
Harper (2005), teachers that engage in practices that foster opportunities to provide
feedback, monitor language and bilingual development enact practices that support
ELs academic school success (de Jong & Harper, 2005).

All participants in the programs presented in this paper have met the
minimum state requirements for instruction of English language learners - 90 credit
hours of Sheltered English Immersion (SEI) training. From 2008 through 2014, two PD programs for five school districts, funded through U.S. Department of Education, were implemented in university/district partnerships as a means to support academic success of ELs and build teacher capacity. Academic Content Combined with English in Secondary Schools (ACCESS) (2008-2013) provided secondary mainstream teachers of long term, fully and limited proficient English learners (ELs) a cohort-based professional development program to extend their knowledge, skills and understanding of teaching English learners. Its companion program, Teaching English Learners Academic Content (TELAC) (established in 2013), offers a university-based professional development program for secondary mainstream teachers of math, science, technology and English/Language Arts. Both ACCESS and TELAC serve several large metropolitan urban districts with a substantial majority of Hispanic students and students at lower socioeconomic levels. The programs are university/district participation programs that bridge gaps in teacher development for teaching of ELs in the Arizona context of restricted language (Garcia, Arias, Harris-Murri, & Serna, 2009). The two programs support mainstream (primarily STEM) teachers in bolstering existing knowledge and skills relative to linguistic and cultural sensitivity and affirming dispositions needed for the instruction of ELs through an ESL curricular framework. While one of the programs seeks to bolster six converging areas that enable teachers to better support mainstream teachers,
the other program supports teachers through an overview of important concepts for teaching ELs but also engages teachers in a process of critical reflection and implementation of sustainable changes to teaching through one-to-one coaching.

This paper presents the findings of two comparable programs developed for mainstream secondary teachers to develop linguistic and cultural sensitivity for students and examines how these were reflected in teachers’ understandings and practices for teaching English learners.

**Theoretical framework**

The ACCESS and TELAC programs utilize the theoretical perspectives of Cochran-Smith & Lytle, 1999 and Dall’Alba & Sanberg, 2006 respectively. The ACCESS program utilized a knowledge-for-practice framework which views building teacher capacity through professional development as a means for teachers to construct new meanings about teaching ELs. The TELAC program views teaching practices as an integration of new learning vis a vis knowledge and skills that become embedded in professional practice (Dall’Alba & Sandberg, 2006, p. 336). Both programs support teachers’ development and learning relative to teaching ELs and work to develop sensitivity to students’ first language and home culture, albeit in different ways.

Professional development (PD) in support of teacher includes PD that
develops linguistic and cultural sensitivity for teaching and ties to teachers’ classroom practices. Desimone, Porter, Garet and Yoon (2002) discuss the role of consistent, high quality professional development leading to sustained changes (p. 105) and reform type of practices. Researchers Garet et al, 2001, identify effective professional development characteristics for participants to include duration, overall participant participation in terms of active engagement, and salient connections to content relative to participants including core features of content, active learning and coherence.

Common to both program models, is the aim to enhance and develop teachers’ culturally relevant and linguistic sensitive teaching practices (Villegas and Lucas, 2002a, 2002b, Lucas and Greenberg, 2005, Lucas and Villegas, 2012) can be achieved through a PD program like ACCESS (Trifiro, 2012). The PD curriculum for teachers of ELS should provide teachers with the needed competencies to scaffold instruction, build background with salient connections to prior learning, language and culture, and consider how language development of their students becomes part of and not an extension of content standards and lesson delivery and assessment. Gándara & Maxwell-Jolly (2000) posit that it is important for teachers to have pedagogical skills that consider ELS’ culture and linguistic needs and abilities. Teachers of ELS must understand the language demands of the content being taught (Merino, 2007; Wright 2010) through a variety of means as well as
scaffold the language of the academic setting (Walqui 2008, Walqui & Van Lier, 2010; Bunch 2013) so that content can be learned. The work of Echavarría, Vogt & Short 2009 provides teachers a pedagogical frame for effective teaching for ELs through sheltered instructional strategies that support EL students. Scaffolding includes a culturally responsive teaching focus whereby teachers automatically consider the cultural and language components of the students (Lucas, Villegas & Freedson-Gonzalez, 2008) while linking academic content specifically as well as literacy techniques (Walqui & Van Lier, 2010). Lucas & Villegas (2012) identify instructional scaffolding as an important aspect of linguistic responsive teaching in that it reflects teachers’ understanding of the complex nature of language learning and linguistic demands, the sociocultural demands of learning English and content, the demands placed on ELs to navigate the variance registers of language found in classrooms as compared to text, and teachers willing to scaffold instruction as a means to support ELs (307). Sociocultural factors pertinent to teachers of ELs take into account a broader understanding of their EL students’ schooling experience at the secondary level (Walqui, 2008, p. 111).

Understanding PD of middle and secondary school teachers of ELs in a restrictive language state must consider many perspectives presented in the literature on ELs and as such must be included as part of the program model. The program models presented address the literature on instruction for ELs in either a
robust, broad fashion as in the case of ACCESS or more specifically as in the case of TELAC. Fundamentally, the programs address the notion of what is important for teachers to know when teaching ELs from both a knowledge and practice perspective.

**Program Models**

Teacher education program models build on the understanding of the sociocultural context of learning, understanding of curriculum and the demands associated with content area instruction diverse students (Darling-Hammond, 2006, 303, Villegas and Lucas, 2002). The PD program models presented, ACCESS and TELAC, have general program goals to increase the cadre of mainstream teachers prepared to teach reclassified and long term ELs in mainstream classrooms. Both models focus on building capacity from a knowledge and skills perspective (Shulman, 1987) as well as seek to build upon teachers’ learning that extend beyond the state mandated SEI requirement and provide the curricular framework necessary to meet state either full or provisional ESL endorsements.

In Table 1, the paper provides an overview of the ACCESS and TELAC program models addressing the overlap and unique features of two ESL curricular frameworks: an 18 graduate credit hours and nine graduate credit hour ESL program. While the TELAC’s program is only nine graduate credit hours, each participating teacher receives an additional four to six hours of coaching support.
beyond the practicum hours as well as individualized support pertaining to their inquiry project which cannot be quantified.

The curricular framework presented in Table 1 presents two models that reflect development of broad based knowledge for teachers of ELs on key curricular components such as the political context of language minority education, knowledge of EL students, their communities, aspects of language development and connections to first language literacy, ways to shift instruction and to use assessments and scaffolding to support EL students in mainstream classrooms (Echavarría, Vogt & Short, 2009; Faltis & Coulter, 2008; Lucas & Greenberg, 2008; Lucas & Villegas, 2012, Walqui & Pease-Alvarez; Villegas & Lucas, 2002a; Villegas & Lucas, 2002b). Walqui & Pease-Alvarez (2012) elaborate on the need for teachers’ practice and learning that is derived through practice with activities related to teachers’ classrooms and analysis of practice through assistance by supportive and more knowledgeable teachers (306). Learning about practice and reflecting on practice is a foundational component of the TELAC program.

Each program aligns to the literature as to what is important for teachers of ELs to know and dispels the myth that teaching ELs is a matter of just good teaching practices (de Jong & Harper, 2005). It is important to note that TELAC’s focus
includes a practicum and one-to-one coaching through a Cognitive Coaching SM process but also include curricular features of ACCESS.
<table>
<thead>
<tr>
<th>Course</th>
<th>ACCESS *</th>
<th>TELAC **</th>
<th>Program Curricular Features</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Foundations (ACCESS and TELAC course)</strong></td>
<td>☑️</td>
<td>☑️</td>
<td>Developing an understanding of the social, political and legislative aspects of language minority education and development of a broad based understanding of ELs. In both programs this course links to other curricular areas.</td>
</tr>
<tr>
<td><strong>Bilingualism and Second Language Acquisition</strong></td>
<td>☑️</td>
<td>☑️</td>
<td>Review of aspects of bilingualism, code-switching, and second language acquisition theories for teaching ELs.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>✓ 24 hours of instruction included in TELAC Foundations.</td>
</tr>
<tr>
<td><strong>Parents and Communities of English Language Learners</strong></td>
<td>☑️</td>
<td>☑️</td>
<td>Develop an enriched understanding of immigrant communities and social context of schools for immigrant children and ways to involve parents in school.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>✓ 15 hours of instruction in TELAC Foundations.</td>
</tr>
<tr>
<td><strong>Assessment</strong></td>
<td>☑️</td>
<td>☑️</td>
<td>Provides an overview of assessments for placement of ELs, informal and formal assessments in teaching contexts.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>✓ 15 hours of instruction in TELAC Strategies for SEI.</td>
</tr>
<tr>
<td><strong>Bi-literacy</strong></td>
<td>☑️</td>
<td>☑️</td>
<td>Develop an understanding of literacy including L1 literacy and opportunities to develop maintain L1 literacy and develop English.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>✓ 15 hours of instruction in TELAC Strategies for SEI.</td>
</tr>
<tr>
<td><strong>Strategies for SEI (ACCESS and TELAC course)</strong></td>
<td>☑️</td>
<td>☑️</td>
<td>This course is considered a capstone course for ACCESS and the final course for TELAC. Focus on SIOP, lesson critiques &amp; modification for ELs. In both programs this course links to other curricular areas</td>
</tr>
<tr>
<td><strong>Practicum &amp; One-to-One Coaching (Cognitive CoachingSM)</strong></td>
<td>☑️</td>
<td></td>
<td>Two semester practicum (45 credit hours total) for TELAC focusing on critical inquiry of practice and exploration of new strategies with Cognitive CoachingSM to mediate practice.</td>
</tr>
</tbody>
</table>

* Fulfills AZ state requirements for a full ESL endorsement. ** Fulfills AZ state requirements for a partial ESL endorsement.
ACCESS Curricular Model
ACCESS utilizes a theoretical framework of Knowledge for Practice (Cochran Smith & Lytle, 1999) to support the program’s curricular plan. This includes in-depth study in: Foundations: Language Policy relative to language minority education; Language: Bilingualism and Second Language Acquisition; Community: Parents & Community Involvement; Assessment: Language assessment for teachers of ELs; Bi-Literacy: Literacy in Secondary BLE/ESL settings; and Strategies: Strategies for Secondary Teachers of ELs. An important programmatic feature of this model is the embedded PD activities that aligned with the university/school district partner goals. For example, the ACCCES partner district had asked for teachers district wide to begin using Cornell Notes as a literacy strategy. As a result, this was not only included as part of the curriculum but also considered how this literacy practice could be used with ELs and different language levels as touched upon writing, academic content knowledge, and strategies for instruction.

The ACCESS curricular model could be considered a converging model whereby each of the program aspects support and develop teachers with foundational core areas that develop culturally responsive teaching (Villegas & Lucas, 2002a, 2002b). In three of the five cohorts, the methods course represented the capstone course in which participants were required to provide a review of four revised lessons on three of the six topic areas covered in the ACCESS program. In
addition, teachers needed to include a literature review (based on readings from the program) of what they’ve learned as means to answering the question “what is important to know as (content area) teacher of ELs” and then provide pre and post lesson plans demonstrating modifications as well as a brief rationale. While the program satisfied Arizona’s educational requirement for full ESL endorsements, respondents of the in-depth analysis of four cohorts indicated that ACCESS's coherence, duration, and cohort programmatic features added greatly to their experience and understanding of teaching ELs (Trifiro, 2012).
**ACCESS ESL PD Program.** Program goal was to develop a cadre of mainstream teachers at the secondary level in one university/partnership district. The program goal was to build teacher capacity beyond state mandated SEI requirements. Embedded are PD activities that support discreet curricular goals established by this one district which are then reflected for teaching mainstreamed ELs.
TELAC Curricular Model

TELAC utilizes a theoretical framework of Embodied Understanding of Practice (Dall’Alba and Sandberg, 2008) to support the program’s curricular plan. Teachers’ understanding of key instruction for ELs is evidenced through teachers’ implementation of new practices and refinement of current practices. Regardless of participants’ experience as a teacher of mainstream ELs, the curricular model seeks to establish a review of fundamental core knowledge that includes language policy, EL students’ parent and community involvement, second language acquisition, literacy practices for second language learners, methods of sheltered instruction, and assessment. The instructional core requires participants to reflect on learning throughout the two semesters ending with a culminating two semester portfolio that charts TELAC teachers’ development. The program utilizes a two semester online practicum that has key activities merged into the hybrid foundational and strategies courses. The primary methods to facilitate teachers own understanding of practice are: 1) Critical Inquiry of Practice – Group Process, modeled on Critical Friends Groups; 2) Inquiry Project where teachers commit to researching some aspect of their practice and 3) coaching focused on a particular practice issue identified by the teacher.
While the ACCESS program focused on developing broad understanding and conceptual knowledge for teaching ELs, the TELAC program similarly develops broad understanding and conceptual knowledge as means to engage in critical inquiry of their teaching practices including refinement of practice through Cognitive CoachingSM.
Method
Data analysis for the study uses a multi-dimensional approach. The data for both research projects are triangulated from a number of sources. The paper presents data from the larger set of ACCESS program evaluation representative of all ACCESS participants, n=99; data from an in-depth study of four ACCESS cohorts n=88 as well as data from TELAC participants n=12. The in-depth study four cohorts in ACCESS, as a dissertation study, reviews the case of 88 participants who comprise four PD cohorts participating in a 18 credits coursework satisfying requirements for an ESL endorsement. The study of a TELAC cohort, n=12, comprise a PD cohort who completed 9 credits of coursework in academic year program satisfying requirements for state issued partial ESL endorsement. The data is triangulated from teacher reported data collected from ACCESS and TELAC teachers through pre and post surveys in addition to data from teacher interviews, course work artifacts, mid-year and end-of-year reflections and recorded coaching conversations to understand the ways teachers’ participation and experiences in each programs influenced the development of knowledge, skills, and attitudes towards teaching English learners. Finally, a comparison is made between teachers’ experience and learning across the two programs. Research analysis uses quantitative measures for the pre/post survey data, quantitative data and qualitative data using a constant comparison method (Straus and Corbin, 1994) from both programs.
Findings

The discussion on data findings addresses the results of ACCESS and TELAC programs from several perspectives. Predominantly, the findings presented directly tie to program goals as well as specific findings relative to in-depth study conducted on four ACCESS cohorts and one TELAC cohort. The findings reflect three general areas: teachers thinking about sheltered instruction, teachers thinking about second language acquisition, and teachers thinking about EL students background and culture.

Teachers thinking about Sheltered Instruction

With regard to thinking about sheltered instruction, participants identify a number of important concepts when integrating sheltered instruction. With ACCESS and TELAC, it evident that post survey results as well as in teacher reflections, participants identify specifically development and use of graphic organizers as ways to support students learning of academic content, sociocultural ways of learning, building confidence with students through peer work and creating classroom environments that support learning.

Within ACCESS’s in-depth study for example, scaffolding and language levels are considered an important part of instruction. When asked to respond to Likert question relative to scaffolding, identically in both questions, 87.5 % (n=34) shared a common response to the need for scaffolding instruction with regard to students’
language levels as well as scaffolding instruction when EL students demonstrate strong oral utilizing different strategies that overall suggest interaction activities, paired activities, strategies that build upon vocabulary proficiency and in writing assignments. Respondents also identified different ways to scaffold instruction at different levels of proficiency and in doing so, reiterated the need for support early on by peers and then later with types of activities that would build upon EL students’ achievement. For example, advanced EL students are in paired activity in completing peer-review edits and offering support to each other to improve their written language (Trifiro, 2012).

As it pertains Likert data relative to sheltered instruction, respondents are asked to self-report their proficiency levels in various categories. With both ACCESS and TELAC there is a significant gain in pre/post survey reporting. In ACCESS, with respect to proficiency levels associated with demonstrating sheltered instruction, 38% (n=24) of participants self rated at the highest level where as previously only 12% (n=7) self-rated at the highest level as part of their pre-survey. It is also evident in the ACCESS program evaluation, 49% (n=31) of participants self-reported at a high level utilizing sheltered instruction strategies routinely in post program PD surveys while previously only 19% (n=12) self-reported at a high level in their pre-survey. With the review of the first cohort’s program evaluation, TELAC participants had a similar response pattern. With TELAC in-depth review of
the first cohort responses to Likert questions, respondents are asked to rate their perceived ability to utilize sheltered instruction strategies. In the post survey responses, 63% (n=12) self reported proficient to high proficiency in this area as compared to 47% (n=8) in the pre-survey.

**Teachers thinking about language and second language acquisition**

In both ACCESS and TELAC, the data reveal theme of teachers’ addressing and thinking about how first language can support their EL students. Additionally, teachers recognize the importance of second language acquisition in teaching academic content. The review of program evaluation data and in-depth data, participants consider the role of first language and how it can support EL students.

While qualitative free response data has many examples from teachers who perceive use of first language in classroom as important, there is also different perspective in support of English-only. From the ACCESS in-depth data set of four cohorts, when asked the question, “Teachers demanding an English-only classroom supports students learning English and content”, the majority of participants’ responses, 63% (n=25) responded as “somewhat disagree” and “disagree”. This response is expected and in alignment to many of open-ended questions that support using first language in the classroom. However within the same data set, 37% (n=15) selected responses as either “agree” and “somewhat agree”. This response indicates the counter argument of supporting EL students with first
language and thinking that relates to language as sink or swim. In TELAC, respondents to a similar question, 31% (n=6) of pre-post survey respondents indicated some level of agreement with the statement that speaking a language other than English should be discouraged. However, 68% (n=13) strongly disagreed with the statement in support of using students first language. While the ACCESS in-depth study includes voices of dissent with respect to first language use for ELs in mainstream classrooms, overall the theme is one that supports EL students’ native language (Trifiro, 2012).

With respect to qualitative free responses, the in-depth study of ACCESS, respondents identify that need for ELs students to use their first language with other ELs to clarify learning and make connections to prior learning in their first language. Other considerations for first language use included: using first language as a means to increase interest in learning content, providing ways to have students write in their first language and then provide a written copy in English as a paired activity, as well as working collaboratively with same speakers of their language and English speakers as a means to foster language development in a mixed group of speakers (Trifiro, 2012).

With TELAC Likert responses and qualitative responses, participants demonstrate connections to language development and the importance of understanding EL students’ language levels as a means to support students in
learning content. For example in review of TELAC Likert data for program evaluation purposes, 47% (n=8) self-reported a high proficiency in being able assist EL students in developing their language abilities. Additionally post survey results indicate that 58% (n=11) self-reported as having the range of “some proficiency to proficiency” in being able to identify EL students’ language development level while in pre-surveys only 26% (n=5) reported similar proficiency in this area. The Likert data coincide with qualitative data as respondents’ reflections underscore the need to be able to develop EL students’ language as well as being able to assess their language levels in order to scaffold instruction and to develop assessments that support students with their learning.

Second language acquisition also is prominently figured in the data. In ACCESS and TELAC post survey Likert and free-response questions and in their reflections, participants talk about second language acquisition naming concepts such as Krashens’ affective filter, comprehensible input, the importance of language levels in terms of scaffolding instruction, and the role of first language support as a means to support second language acquisition. In both TELAC and ACCESS participants’ experience aided them in bolstering their knowledge of second language acquisition. For example, when ACCESS participants are asked the question, “I have a strong understanding of second language acquisition for adolescents” approximately 93% (n=58) reported to be in the range of proficiency
to high proficiency. For TELAC participants, the majority of participants respond equally high, 78% (n=15) identify as having “some proficiency to high proficiency.”

**Teachers thinking about EL students’ culture**

The role of EL students’ culture figures prominently in the data from ACCESS and to some extent in TELAC. In ACCESS Likert data, 82% (n=52) responded as having moderately high to high proficiency to the question “I understand the cultural and language development backgrounds of my students”. In another Likert question addressing teachers’ connections to community, 56% (n=37) responded as having moderately high to high agreement to the question “I see myself as a bridge between my school and the community”. An additional Likert question from ACCESS reveals teachers connections to parents. In another Likert question addressing teachers’ connections to parents, 41% (n=25) responded as having moderately high to high agreement to the question “I actively engage and secure the involvement of the parents of my ELL students”. Further analysis of the in-depth cohort of ACCESS participants free response questions indicate the theme of teachers supporting EL students success by having students feel connected to school through their culture. One participant stated “[EL students have to] have the opportunity to learn in an environment that celebrates their native language, culture and background (Subject 7G) (Trifiro, p. 108). Teachers also reported both
advocating on behalf of ELs as well as taking on leadership roles with fellow teachers and when necessary for EL students (Trifiro, 2012).

With regard to TELAC, the preliminary review of cohort data that includes artifacts and teacher reflections, the preliminary review indicate that teachers identify the importance of making salient connections for students and finding ways to bridge this knowledge to content. Participants conduct student interviews as a means to become get to know two EL students they instruct. Teachers report that this activity provides glimpses of who their EL students are and opportunities to think of EL students as students’ whose social concerns, immigration status and cultural values are considerable diverse and distinct as compared to other students who do not share similar situational and social context. Overall, teachers who participated in both programs reported they were far more aware of their English learner students’ needs and ways to address language, culture and content for their EL students.

Discussion

Despite the pressing Arizona context that presents a unique set of circumstances in a restrictive language state, the changing multicultural and linguistic classrooms provide unique challenges to mainstream secondary teachers in similarly situated
contexts and in school districts seeking ways to support EL students’ academic success. With an ever increasing need for highly effective teachers of ELs, particularly at the secondary level where graduation rates for ELLs are 30-40% lower than non-ELs (Ballantyne, et al. 2008), the PD programs presented in this paper support mainstream teachers in bridging the gap of teacher preparation frequently absent in university teacher preparation programs (Menken & Antunez, 2001, Gandara & Maxwell-Jolly, 2006). Both the ACCESS and TELAC professional development programs prepare teachers through an ESL curricular framework that develops and supports teachers’ learning through development of linguistic and cultural awareness, instructional knowledge and affirming dispositions as a means for teaching ELs.

**References:**


Arizona Revised Statutes, Title 15, Article 3.1, § 15-756.01 (2000).


Title: The Alternative Learning Center: A Social/Emotional Approach to Academic Excellence Without Sacrificing Rigor

Topic Area: Alternative Education/Online Learning

Presentation Format: Workshop

Description of Presentation: The purpose of this session is to share strategies and ideas for providing educational services in a specialized setting with an independent program of study designed to meet each student’s unique learning style and personal needs. Participants will understand:

- student populations who would benefit from alternative educational settings
- the academic and social/emotional components of a successful independent study program
- organizational structures/supports necessary to facilitate a successful independent study program

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Alternative Learning Center Abstract
Oceanside Unified School District

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 21st 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 28th, 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 21st 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 21st 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 21st 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 21st 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 21st Century Learner as they become college and career ready.

For the 2012-2013 school year, Ms. Perez and Mr. Tyler proposed implementing and piloting the Alternative Learning Center starting second semester. During this pilot phase, they focused on servicing a cohort of students including home hospital, special education and those with behavior and attendance concerns. Our goal was to evaluate practices and procedures for managing the ALC, identify best instructional practices, and establish community agency relationships. Additionally, they researched 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 Semester, 2013:

In the fall of 2013, the ALC expanded to include blocks throughout the instructional day, from 7:30 am – 3:00 p.m. Staffing includes: four teachers, two aides, one PASS Americorps Intern and one administrator.

By the end of the fall semester, 2013, we had 61 students enrolled for at least 30 days in the ALC. These students have taken and passed 136 classes, earned 680 credits and logged over 3100 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. This fall, 64 students participated in more than 227 individual counseling sessions. Moreover, 55 students participated in 187 group counseling sessions. Additionally, students and families are being referred to outside agencies for individual and family sessions based on discovery conversations from the on-campus meetings.
As of the spring of 2014, we have continued to see significant success in the use of the program. We had a total of 154 students throughout the entire school year who completed 377 courses, earning 1885 credits at an 84% pass rate. Total attendance hours equaled 5531 for the year.

Another major development that occurred in the spring was the incorporation of the college and career readiness component of the program; in partnership with the local Chamber of Commerce as well as a Resort Hotel Chain, students were able to secure 15 paid/internship positions in these establishments while enrolled in the ALC Program.

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.
a. **Title of submission**: Implementing ‘Gamification’: Building student engagement and achievement in the classroom across disciplines

b. **Presenter**: Cameron Basquiat

c. **Topic Area of Submission**: Cross-disciplinary areas of Education

d. **Presentation Format**: Poster Session

e. **Brief Description/Abstract**: This presentation will explore the role of Gamification within the college classroom in building student engagement and participation leading to increased comprehension. Gamification, the process of applying elements of games (scoring, participation, and completion) has a rich history in marketing and the business world, but has recently grown in its use in the field of Education. Research in K-12 and college settings has found it increases student participation, engagement and grade achievement across disciplines.

f. **Author**: Cameron Basquiat

1. **Name**: Cameron Basquiat

2. **Institution**: College of Southern Nevada

3. **Contact information**:

   [Cameron.Basquiat@CSN.edu](mailto:Cameron.Basquiat@CSN.edu)
a. **Title of submission:** CRITICAL ETHNOGRAPHY AS INTERCULTURAL COMPETENCE: TEACHING STUDENTS TO APPLY THEORY TO PRACTICE

b. **Presenter:** Jennifer Basquiat

c. **Topic Area of Submission:** Higher Education

d. **Presentation Format:** Poster Session

e. **Brief Description/Abstract:** This proposed poster presentation will discuss the tremendous benefits to students when they engage in ethnographic research. Further, it will highlight this assignment’s methodology, present several films as excellent illustrations of nontraditional ethnography (*The King of Kong*, *The Other Dream Team*, and *Trekkies*), and showcase student examples of completed work. Handouts that accompany the assignment will be provided.

f. **Author:** Jennifer Basquiat

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2. **Institution:** College of Southern Nevada
3. **Contact information:**
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Casting new light on long shadows: Insights from Saskatchewan Aboriginal students about improving teaching and learning

Paper presentation to the 13th Annual Hawaii International Conference on Education

January 5-8, 2015
Honolulu, HI

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Abstract

This study privileged the voices of 75 high school Aboriginal students from Saskatchewan, Canada who shared their experiences in school, and ideas about good teaching and their learning needs. Based on focus group interviews with students in six high schools (urban, rural, provincial and First Nations band schools), we aimed to learn the factors that contribute to or detract from Aboriginal students’ school performance. We used in vivo coding to reflect these students’ perspectives. What they described as supportive for their learning included personal relationships with teachers who understood them as whole persons; teachers who were willing to commit extra time to helping students understand material; teachers who were engaged in teaching in a way that showed they loved their teaching life. Hindrances to their learning included teachers who favored other students—those considered “preppy” and of dominant culture; teachers who were disrespectful to students; and, racism and stereotyping of Aboriginal students. We respected the principles of Indigenous methodology, including the cultural guidance of a First Nations Elder.
Introduction

In Canada the rate of high school completion for students between 18 and 19 years of age was reported to be 76.9% on the last Canadian census (Statistics Canada, 2010). For Aboriginal\(^1\) students, however, this rate is almost 30% lower (Raham, 2010). Among the population range of 15-24 year olds, Saskatchewan has the second highest provincial population of Aboriginal people (19.8%), second in rank to Manitoba with 20.0% (Statistics Canada, 2006).\(^2\) Based on the 2011 National Household Survey, 34% of Saskatchewan’s total Aboriginal population was under the age of 15. The corresponding non-Aboriginal population was under 17% (Government of Saskatchewan, 2013). Graduation rates suggest we are failing our Aboriginal students in Canada; demographics in Saskatchewan command our attention if we want to arrest a persistent trend.

The Final Report of the Joint Task Force on Improving Education and Employment Outcomes for First Nations and Métis People (Merasi, Bouvier, & Hoium, 2013) re-emphasized the discrepancy between Aboriginal and non-Aboriginal people on educational and economic measures. Given such statistics, the Saskatchewan Ministry of Education has prioritized Aboriginal education. Saskatchewan was a leader in mandating Treaty education in the curriculum in 2007 (Saskatchewan Ministry of Education, 2013). Despite these initiatives high school completion rates for Aboriginal youth in Saskatchewan is roughly 25-30%, compared to 70-80% among their non-Aboriginal peers (Steeves, Carr-Stewart, & Marshall, 2011). Alongside the provincial and national Aboriginal student success statistics, we note a global concern for the achievement rates of involuntary minorities—a term coined by Ogbu and Simons (1998)—such as African American, Latino, and American Indian in the United States, and Māori in New Zealand (Bishop, Berryman, Cavanagh and Teddy, 2009).

Our research was motivated by concern for local and global school achievement rates among minority populations and in particular Aboriginal groups. While scholars have investigated the connection between ethnicity and engagement (Bingham and Okagaki, 2012), and culturally responsive schooling to support Indigenous students (Castagno & Brayboy, 2008), the majority of this research has not sought Aboriginal student perspectives. We felt compelled to seek the student voice, noting, as does Levin (2000), that the least successful students are accorded the fewest opportunities to actively participate in their learning.

We aimed to understand from the particular viewpoint of high school Aboriginal students in the Province of Saskatchewan in western Canada: (1) what is the experience of school; (2) what about teachers helps students’ learning and school performance; and, (3) what about teachers hinders students’ learning and performance. Through interviewing students, this research was uniquely positioned to advance understanding of schooling experiences from the points of view of Aboriginal students; honor local schooling context (Saskatchewan) of Aboriginal students’ knowledges about and

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1 We align with Statistics Canada’s definition of Aboriginal to include North American Indian, Metis, and Inuit.
2 The territories—Yukon, Northwest Territories, and Nunuvat—have the highest populations of 15-24 year old Aboriginal people, at 30.2%, 57.9%, and 92.8%, respectively in Canada (Statistics Canada, 2006).
experiences with learning to flesh out a Canadian perspective; and cleave existing literature by employing Indigenous principles in research aiming to improve student learning outcomes for Saskatchewan Aboriginal high school students.

In this study, a positive school outcome was defined as academic success. However, we note that academic success is only one, albeit significant, indicator of student engagement. Engagement can be perceived and interpreted in a variety of ways. For example, Davison & Hawe (2012) include in their definition of engagement students’ participation in “nonacademic school activities” (p. 65) as well as their identification with and valuing of school outcomes. Given that we sought Aboriginal students’ perceptions of their school engagement, it is prudent to complicate the notion of engagement to further understand how this is understood among this group. Despite the current interest in the role of ethnic background when it comes to engagement in learning, engagement itself is yet to be interrogated, and understanding of how ethnicity factors into schooling experiences and outcomes for those students (Bingham & Okagaki, 2012).

This article offers a brief overview of the methodology of the study and the literature on student engagement and culturally based pedagogies that frame our research. A discussion of the findings is integrated throughout the presentation of student voices. The aim of this paper is to center Aboriginal student perspectives and thus the stories are the focus of this article. We conclude with a brief summary of the findings.

Methodology

The conceptual framing for this study arises largely from the research found within culturally inclusive pedagogical approaches. Within the literature on culturally based approaches to schooling Demmert and Towner (2003) identify several aspects that must be evident: integration of Native language; cultural traditional pedagogies between child and teacher; curriculum and teaching approaches inclusive of traditional Native culture; a strong Native presence in school operations; and social and political understanding of the Native community. Of the research involving Māori secondary students in New Zealand, Bishop, Berryman, Wearmouth, Peter, & Clapham (2012) have articulated culturally-based approaches as relational pedagogies. In the New Zealand study, according to Māori students what was needed to improve Māori students’ achievement was for teachers to develop and adopt a relationship-based pedagogy in their classrooms. It was apparent to them that teachers must relate to and interact with Māori students in a manner different from the common practice if a change in Māori students’ achievement was to occur.” (p. 696)

While “culturally responsive schooling” (Casagno & Brayboy, 2008) has long been recognized as a promising approach to improving educational experiences and outcomes for Aboriginal children and youth in Canada, much of the research conducted to gain insight into Canadian Aboriginal education primarily focuses on pedagogy, and from educators’ points of view (e.g. Laramée, 2008). Further, there are decades of research on the importance of culture for student success in school, but many studies are conducted within a Western paradigm, motivated and controlled by non-Aboriginal researchers.

In an effort to integrate Aboriginal voice in the research and the research design the project was guided by Indigenist principles. The following elements included in the
research design: Indigenous philosophical and community knowledges and experiences (Smith, 2013); the use of story as method (Archibald, 2008); and recognition of the role of relationality within research involving Indigenous peoples (Kovach, 2009). To ensure congruence the research team included individuals possessing the following attributes: knowledge and experience in Indigenous student engagement; familiarity with Indigenous research methodologies; knowledge of the Saskatchewan Indigenous context and Saskatchewan schooling context; and capacity in the relational nuances and diplomacies in both Indigenous and non-Indigenous contexts. First Nations Elders were consulted for their guidance to ensure the research process was respectful, ethical, and beneficial to Indigenous peoples. The research team consisted of Aboriginal and non-Aboriginal researchers.

To capture contextual nuances, we employed multiple case study (Stake, 2005) and selected six schools in urban and rural Saskatchewan, including provincial and on-reserve. In each school we conducted two focus groups with 5-8 students from grades 9-12 in each group. At each school a counselor or Aboriginal liaison assisted with recruiting participants. Seventy-five students shared their insights with us. The First Nations with which these students identified included Cree, Dene, and Saultaux.

We provided students with six questions that were the focal point of the conversation. The questions were geared toward gaining insight into how they experienced school, their post-secondary aspirations, what they believed constituted a good teacher, and what teacher-related or other strategies/conditions supported or inhibited their performance. Recorded conversations lasted about an hour, producing 331 pages of transcript. In keeping with Indigenous methodology, we reconvened the students to give them an opportunity to read the transcripts to verify and/or edit the information recorded to ensure we reflected their stories (Kovach, 2009).

A qualitative approach of thematic coding data was used in the analysis. The data have been coded using what Saldaña (2013) calls simultaneous coding. This means that the same excerpt might have been assigned multiple codes. Descriptive coding was involved at this point so the data could be chunked into basic topical categories of meaning in relation to the key concerns of the study: school experiences, educational aspirations, effective teaching, and learning supports. Second cycle coding employed axial coding to identify correspondence within or divergence from responses to questions guiding our study. Given our concern with honoring Aboriginal students’ voices, we used in vivo coding to represent the main learnings from our conversations. The aim of in vivo coding is to use the research participants’ words in developing themes and categories. In doing so, the objective of the in vivo analytical strategy is to stay as close as possible to the participant’s voice (King, 2008).

Delimitations and Limitations
All research is limited; no study can claim to be exhaustive. It is critical to acknowledge the limitations of this study so that it is clear what our interpretations can and cannot answer with respect to Aboriginal students’ schooling.

Interpretations from case study research are not generalizable (Mertens, 2015). There are over 170,000 students attending 28 provincial schools in Saskatchewan (Government of Saskatchewan, 2013). There are 19 Band operated schools (Indian and Northern Affairs Canada [INAC], 2013). We included five provincially funded schools, and one band school in our study. This enhanced the emic perspective into Aboriginal students’ schooling. We also note these participants were socio-culturally located and temporally bound by an arbitrary data collection time frame, and represented their own perspective rather than the perspective of all students in Saskatchewan for all of time. We insist, however, that our study answers a call to listen to Aboriginal students.

Focus groups have their own set of limitations peculiar to this approach (Morgan, 1997). Individuals may not have articulated their individual viewpoint, but rather a response to the context itself. The groups may not have been representative in all cases. Dominant voices that often emerge in this open-ended method, despite the invitation to be mindful of each other and the invitation to hear from all the participants, may have biased the outcome. Further, because focus groups are not fully confidential or anonymous, it may have discouraged participants from speaking their truth.

Finally, who we are impacts upon what we notice and understand. Having Indigenous and non-Indigenous eyes looking at the data may have sharpened our vision. We also know that seeing is a form of not seeing in qualitative research (Silverman, 2005).

**Literature Review**

Because our study was centrally concerned with what supports Aboriginal students’ learning, we were lead into the research on student engagement. We recognized much of that literature highlights findings from studies conducted in the United States. Though informative, we were concerned with the emphasis on Black and Latino students may not sufficiently contextualize our research inquiry; therefore, we also focused on literature regarding culturally sensitive teaching with respect to Indigenous students.

**Student Engagement**

Student engagement has gained prominence as a topic of research in tandem with a preoccupation with standards-based accountability for students’ academic performance. For instance, Willms’ (2003) examination of results from the Programme for International Student Assessment (PISA) emphasized that addressing the needs of students who have lost connection with their learning is a key challenge facing teachers. High levels of engagement are argued to be associated with academic success (Caraway, Tucker, Reinke, & Hall, 2003; Wang & Holocombe, 2010). By contrast, disengagement is found to be a condition that leads to drop out (Bridgeland, Dilulio, & Morrison, 2006; Rumberger, 2011). Given the importance of student achievement, a corpus of research
has developed on the phenomenon of engagement, the conditions of engagement, factors that influence students’ engagement, and the role of ethnicity in student engagement.

Engagement has been the topic of theoretical analysis. Connell (1990) regarded engagement as a matter of behavior, emotion and cognition. Educational researchers who have taken up this work have found support for Connell’s definition, and more importantly, have argued for the complex and interactional relationship among the dimensions. Important advancements in the area of emotional engagement, for example, have helped us understand that students’ learning is not simply a matter of their behavior and attention in the classroom, but is rooted in and affected by how much they enjoy the classroom, and how closely they identify their ‘selves’ as academically successful. Students’ identity development is a key factor in their level of engagement (Lannegrand-Willems & Bosma, 2006; Yonezawa, Jones, & Joselowsky, 2009).

Environment and teacher behavior have been found to be important influences on student engagement as well. Quantitative and mixed methods studies attempting to isolate the relationship between environmental and personal factors, and student engagement, are instructive here. A recent American study examined factors associated with school climate (Bradshaw, Waasdorp, Debnam, & Johnson, 2014). A significant contribution of this study was the finding that a culture of equity and fairness was important to student engagement. In particular, when students perceived their teachers to be emotionally supportive, they were more motivated in their academic work. This cohered with other research findings (Wentzel, Battle Russell, & Looney, 2010).

A study conducted by Cooper (2014) quantitatively and qualitatively investigated how connective instruction, academic rigor, and lively teaching, which are purported to be engaging teacher practices, explained differences in student engagement across over 580 classes in one diverse American high school. Her findings emphasize the importance of student-teacher relationships and the use of connective instruction (Martin & Dowson, 2009)—the practice of helping students draw personal connections to content. As Cooper noted, the “engaging element of connective instruction…is that such instruction honors who the students are—acknowledging that they are particular people with particular interests, points of views, personalities and experiences” (p. 367). Cooper also found that when teachers promote academic rigor in the classroom by challenging the students and demonstrating their own love for the topic, engagement is impacted. She found a similar result when examining the role of lively teaching—the use of games or interactive approaches. What is significant about Cooper’s work is that while all three factors were related to engagement, connective instruction had the greatest statistical impact on engagement. Relationships between students and teachers are obviously central to engagement.

Given our focus on Indigenous student achievement, research examining the connection between ethnicity and student engagement interested us. Cooper’s (2014) study was instructive in this regard as well because she conducted her study within a high school that reported less engagement and lower achievement by Latino and Black students. The Latino students in particular reported lower levels of connective instruction, academic rigor, and lively teaching. She contended that the way Latino students interpreted teaching practices, such as interactive learning, may have explained the difference in statistical outcomes. The qualitative case studies in her research, however, suggested that students were engaged when teachers were humorous, relatively relaxed in
their teaching, and who shared aspects of themselves in a reciprocal attempt to get to know students. In an ethnographic study conducted in Canada’s Northwest Territories where student drop out is reported to be as high as 75% (Indian and Northern Affairs Canada, 2001), Davison and Hawe (2012) explored how the school and the school setting positively or negatively affected student engagement. They also emphasized that student engagement is not a universal concept: features of the school environment that may create engagement for some students could be a corrosive factor for other students’ engagement. For example, students’ unfamiliarity with a school setting eroded engagement for some, but for others, that the school was physically separated from their main community made it an oasis.

Bingham and Okagaki (2012) perhaps provide the most comprehensive review of literature concerning the role of ethnicity in student engagement. Their chapter in the Handbook of Research on Student Engagement highlights student, family and school factors that influence minority students’ engagement in school. Since our study was primarily interested in Aboriginal students’ school experiences, we were keenly interested in their summary of literature on how teachers impact ethnic minority student engagement. Research demonstrates that positive student-teacher relationships are crucial to the learning process for ethnic minority students. This is perhaps because a connection with teachers helps them navigate an environment that is socio-culturally different from their family life. Further, research suggests teachers’ perceptions of ethnic minority students vis-à-vis White students makes a difference to how students engage. For example, Tyler and Boelter (2008) studied low-income African American middle school students and concluded that students who perceived their teachers’ expectations of them as high were more engaged cognitively, behaviorally, and emotionally. Pigott and Cowen’s (2000) American study of elementary urban school teachers showed that Black and White teachers’ ratings of Black students were negative compared to their judgments of White students. Dee (2005) found that teachers who were not of the same racial background tended to rate ethnic minority students negatively. Though she found this throughout her study of each region of U.S.A., she found statistical significance only in the American South. These findings suggest to us the persistent influence of history, and may provide a useful parallel to the Canadian context with respect to the history of Aboriginal-settler relations.

Students’ positive feelings about their teachers correlates with student engagement. In fact, in a longitudinal study of Latino students in the U.S.A. Green, Rhodes, Hirsch, Suarez-Orozco and Camic (2008) found students’ assessments of their behavioral engagement in school changed in accordance with their reports of adult support at school. If they perceived support from adults at school to be low, they reported low engagement in school. In a similar vein, ethnic minority students benefitted when teachers understood their specific needs and challenges (Gay, 2000). Conchas’ (2001) California study of a diverse urban high school concluded that school programs that heeded racial and ethnic diversity contributed to Latino students’ engagement and empowerment in learning. Also pertinent, however, was the finding that the inclusion of racial and ethnic issues in programming in some cases was characterized by more punitive measures in the school for ethnic minority students, which ultimately decreases student engagement. Bingham and Okagaki (2012) cite numerous studies with such findings.
Much of the literature on student engagement cites American studies focused on Black or Latino populations. Bingham and Okagaki (2012) do, however, reference findings that showed how differences in values and behavior between the home life of American Indians and their schools makes it difficult to align with school expectations in things such as competition, making these students appear to teachers as unmotivated and unengaged (Castagno, McKinley, & Brayboy, 2008). Our study aimed to complement existing work by highlighting Aboriginal students’ voices from a localized Canadian context. We assumed this would enrich understanding of ethnic minority students’ experiences in school, but also bring to light Aboriginal student perspectives that are not as often heard. Given that cultural dissonance experienced by Aboriginal students is an area of critical importance for our study, we were also informed by scholarship that focuses on culturally based pedagogy and culturally responsive teaching, which we discuss in the next section.

Culturally Responsive Pedagogy

In considering Aboriginal student engagement our research is informed by the literature available on culturally based pedagogies (Demmert & Tower, 2003; Casagno & Brayboy, 2008; Bishop & Berryman, 2010). We note that cultural practices do not exist in isolation of parental, familial, peer, community and societal influences. However within the research on “culturally responsive schooling” (Casagno & Brayboy, 2008) the emphasis is on culture. As mentioned, Demmert and Towner (2003) define culturally based schooling as inclusive of traditional Native values, languages and pedagogical approaches within a nuanced understanding of community context. The literature suggests that the impact of culture on positive school outcomes (one indicator of student engagement) can act as a causal factor for academic success and/or create added stress for the Aboriginal students (Jackson, Smith and Hill, 2003; Rahm, 2009). In relation to strong cultural grounding, Deyhle’s (1995) study included interviews with 168 youth who left school, as well as another 100 youth who were either currently in school or had successfully graduated. Deyhlle found that those students who faced discrimination in the workforce and “a vocationally centered assimilationist curriculum” (pp. 403) were more academically successful when grounded in their traditional Navajo culture. Situated within a grounding of “cultural integrity” (p. 437), Deyhle’s study reported that a strong cultural identity did not pose a threat to school success and school success did not pose a threat to Navajo identity. Citing her 2009 report Best Practices in Aboriginal Education: A Literature Review and Analysis for Policy Directions, Rahm (2010) identified Aboriginal cultural inclusiveness as one factor in promoting retention rates of Aboriginal students. According to Rahm (2010) a sense of belonging is promoted through “a visible Aboriginal presence in the school and curriculum, positive relationships, opportunities to express their cultural identity, and family involvement in the life of the school.” (p.4).

When factoring in Aboriginal languages within cultural pedagogy discourse, research suggests a correlation between Aboriginal language and positive student outcome (Guevremont and Kohen, 2012; Bernard, 2010).

On the other hand, research also indicates that a strong cultural grounding may create tension for the Aboriginal students entering into western schooling systems. A study of post-secondary study of 15 Navajo students by Jackson, Smith and Hill (2001)
reported that students experienced a cultural divide between their home/community life and the college they were attending. In considering culture as a component of human identity, one student in this study reflected upon the interpersonal tension of being of a minority culture. “It’s harder to relate to people [at school] when you’re who you are, you know, because I think it’s different.” (p. 560). It is a dissonance referenced in Aboriginal education whereby an Aboriginal learner is required to leave the cultural aspect of self at the door to gain success within another culturally imbued paradigm (Deyhle, 1995). From this literature, the cultural bifurcation between the home and school creates stress and impacts school achievement. The extent to which this internal dissonance is exasperated by a daily epistemic “myopia” within the schooling environment is integral to this discussion. As Rico (2013) states: “It is only when teachers see the complexity and myopia of some of their historic, geographic, and political commitments that they can then make such complexity available to their students.” (pp. 33).

In highlighting the role of teacher-student relationships and Aboriginal student engagement the following studies offer insight. The status of Aboriginal student and teacher relationship was documented in research conducted by Silver, Mallett, Greene and Simard (2002). Through interviews with 47 Aboriginal students in Winnipeg inner city high schools the study found that there was a desire by Aboriginal peoples to be engaged in education. However factors such as a cultural discord between school and home, and the felt experience of racism in the school were impediments. In focusing specifically on teacher-student relationships, these researchers asked the student research participants, “How well would you say Aboriginal students at your school get along with teachers?” In response, 46.7% “responded with positive comments like “very well”, “good”, or “OK”, and interestingly, only one in four of the female students responded in this positive way to this question.” When students were asked whether teachers “understand Aboriginal students”, less than half (44.4%) of the students responded affirmatively.” (p. 17) According to Rahm (2010) best practices in Aboriginal education indicate that teachers working with Aboriginal students ought to be “warm and caring, hold high expectations, and possess a wide repertoire of instructional strategies and explicit knowledge of culturally appropriate approaches.” (p. 6). If we assume that Rahm’s statement is at least partially implied in the question posed in the Silver et al. study, the student response of the latter is troubling. The question, then, is how much does the student-teacher relationship matter from an Aboriginal student perspective? A New Zealand study with Mäori students helps to clarify if the teacher-student relationship is a factor in Aboriginal student engagement.

The Te Kotahitanga study (Bishop & Berryman 2010) explored factors associated with Mäori student engagement. The first phase of the Te Kotahitanga project took place in 2001 and 2002 “by talking to Year 9 and 10 Mäori students in a range of schools” (Bishop & Berryman, 2010, p. 175). The research demonstrated measurable and improved student learning outcomes for students in the study. Along with student interviews, the study employed focus groups and individual interviews with key educational stakeholders (teachers, parents, administrators, students) to gain insights into the disparate educational outcomes between Mäori and non-Mäori youth. Bishop, Berryman, Wearmouth, Peter and Clapham (2012) describe the purpose of their study: “The aim of these interviews was to identify the lived schooling experiences of Mäori students, and those most closely involved with their education.” (pp. 694-695). The
research findings concluded that while most teachers had positive intentions, “most teachers identified what they saw as Māori students’ deficiencies as being the main reason for their low achievement” (pp. 695-696). The authors commented this contrasted with the views of students, parents, school administrators and a minority of teachers. "The students unanimously identified that it was the quality of in-class relationships and interactions they had with their teachers that were the main determinants of their educational achievement " (p. 696).

The literature suggests that culturally responsive teaching and the student-teacher relationship within a culturally responsive pedagogy influences Aboriginal engagement. However, we note that this alone will not reverse trends in Aboriginal student engagement (Kanu, 2007). Research in Aboriginal education stresses the negative impact of racism on Aboriginal school engagement (Merasty et al, 2013; Silver et al, 2002). The socio-economic disparity faced by Aboriginal children in the province of Saskatchewan must be factored into Aboriginal student outcomes. In Saskatchewan, 45% of Aboriginal children live in low-income families. (Douglas & Gingrich, 2009). The Saskatchewan Teacher’s Federation (2012) has recognized that poverty is “strongly correlated with a lack of success in education.” (p. 9). A further consideration in Aboriginal student engagement is the potential for a confluence of service providers to be involved in Aboriginal students’ lives. In 2006, 6% of Aboriginal children and youth between 0-19 years of age were living in out-of-home care (Saskatchewan Child Welfare Review Panel, 2010). Given the range of possible variables that may impact an Aboriginal student learning experience, we were interested in what Saskatchewan Aboriginal students had to say about school.

Presentation of Data

Educational research focusing on social justice has attempted to address the issue that our current model of education does not work for all students. Despite this, students’ voices are persistently eclipsed, especially those of Aboriginal students in the Canadian context. Our overarching aim in this study was to begin to remedy these oversights. It was important that we honored these Aboriginal students by presenting the themes in vivo—Latin, meaning “within the living”—so that the interpretations we brought to the data remained as authentic to these students’ voices as possible. We present the data in the following sections in alignment with our data collection questions:

• Students’ school experiences
• What helps students’ learning and performance
• What hinders students’ learning and performance

Students’ School Experiences

There was a range of experiences reported by these students—both positive and negative. What was common among the groups was that these students attended more than one school in their educational experiences. There tended to be more negative memory of past schools these students attended compared to the schools in which these students were enrolled at the time of data collection. Positive experiences were connected to enjoyment of curriculum, particularly options for what and how they learned, as well
as feeling comfortable and welcome in the school. Negative experiences revolved around perceived negative stereotyping, racism and/or classism, bullying, and intimidation among a large school population. The range of experiences made it difficult to codify the data into themes. This student perhaps summed it up: “There are some bad days and there are some good days” (S2). Our presentation of students’ experiences attempts to articulate this description.

Positive Experiences. School was a positive experience when learning was hands-on, and when school was socially engaging. The following experiences that were highlighted by the students included the importance of hands-on learning and the social impact of learning.

“When it comes to school…I learn that I am more of a hands on type person.” Several students in the study spoke about the importance of hands-on learning as a part of keeping them engaged in their classwork. One student offered, “Before I came here I had a lot more opportunities….I would have had my welding and construction, mechanics…I was taking all of those classes.” This particular student lamented having to change to the current school because of a perceived lack of hands-on courses. The choice of option classes seemed to be part of other students’ positive experiences: “We have the guitar and everything, and that really is interesting. A lot of people are into music. We have drama. We have choir. We have lots of different things here.” How students learned was as important for some students as what they learned: “When it comes to school…I learn that I am more of a hands on type person. I would rather learn by doing it than actually reading about it.” These comments are reflective of some of the students in Cooper’s (2014) embedded case studies, who reported activity based learning such as performing experiments and group tasks to be engaging. Importantly, comments like, “I am learning a lot,” indicate academics had central importance in students’ positive experiences. Those who participated in advanced placement classes spoke enthusiastically about school: Their responses included, “I love school. It's wonderful” and, “It’s a fun school and fun to learn.”

“It was a real nice school, and I made a whole bunch of friends.” Students reflected on the importance of the social aspect of schooling. The social aspect of school also seemed to contribute to students’ positive experiences: “It was a real nice school, and I made a whole bunch of friends.” Moving to a larger school was intimating for one student: “I came from a school with only a little bit of people—only 30—and it is scary now because I ended up in a school filled with so many students.” When asked to talk about school experiences one student said, “Mine is great. But sometimes I am scared to lose my real friends or lose who I am.” A different student reinforced social security:

I really liked it when I first came here. It was nice. Like, I actually felt welcomed like with the teachers and the staff. They were really nice and the students here were, they were awesome, you know...Lunch would be provided here and I just felt real safe here.
This student also described drumming and dancing as part of lunchtime activities. This and other kinds of extracurricular involvement were also part of what made these students' experiences positive, emphasizing the notion that nonacademic engagement complements academic engagement.

**Negative School Experiences.** Words that these students used to describe their negative school experiences included “crappy”, “boring”, and “too easy”. These descriptors applied to academic and social contexts. We felt the academic experiences could be reflected in our later discussion of what hinders students’ learning; therefore, in this section we focused on these students’ experiences with and perceptions of racism and stereotyping. As Connell (1990) argued behavior, emotion and cognition factor into student engagement. The lived experience of racism and its impact on student engagement is a factor that dwells in the affective domain. In reflecting upon racism and stereotyping students spoke about the general impact of racism, teachers’ assumptions of student ability, Aboriginal students seen as trouble and the experience of receiving differential treatment or being judged because of being Aboriginal.

“**Oh, it's a white school. It's a racist school.**” Keeping in mind literature that stresses the importance of cultural integrity (e.g. Deyhle, 1995) and the negative impact of racism on Aboriginal student engagement (e.g. Merasty et al., 2013; Silver et al., 2002) we prompted students, where we felt it was appropriate, with questions like, “Is there racism?”

A discussion of racism and what it was like for these students to be part of an ethnic minority in their schools occurred in three of the six schools. Two were provincially funded schools, and one was a First Nations school on reserve. Where it was asked, racism was confirmed. When interviewing students, we asked, “What’s it like to be an Aboriginal student in this school? One student responded, “Not good I guess. You kinda feel different from everybody else cause there is kind of like less of us and more of them.” This school was an urban provincial high school. There was recognition of ethnic segregation. When asked if students mixed together, one student said they “Stay in their own groups.” Same ethnic group bonding was reported among African American students in Hamm’s (2000) study, which may explain why some students in our study felt uncomfortable in a school dominated by White students.

“**They acted like we were slower and we didn’t understand things,**…” Students spoke about what they perceived as teachers’ assumptions of student ability. They attributed teachers’ low expectations of them to their Aboriginal culture. Some students described experiences with teachers that made these students feel academically inferior: “**They acted like we were slower and we didn’t understand things, and they explained it slower. And sometimes they put us in a different class.**” This student went on to say, “**Automatically we were assigned to talk to the counselor, and to do work with the counselor....They didn’t test us.**” Disproportionate representation of minority students in special education programming has been documented as a persistent problem (Artiles, Kozleski, Trent, Osher, & Ortiz, 2010). This has been clearly noted among African American and American Indian students in the U.S.A. (Losen, 2002), and ethnic minority
students in the U.K. (Parsons, 2008), and more recently in Australia (Graham, 2012). In Canada, the British Columbia Ministry of Education published a report indicating the same for Aboriginal students (McBride & Kee, 2001). Most telling for us is that students themselves draw the connection between deficit assumptions and their Aboriginal identity:

There was this kid that I didn’t really know, and he was a lot darker than me because I look like a white kid. I grew up like a white kid, right? But I am Aboriginal, not like a whole lot, but you know, a little bit counts...What I noticed with the teacher is every time I asked for help I got help right away. But every time this kid behind me—he was Native, he was darker—every time he asked for help he didn’t get every thorough help...it wasn’t good help, it was like, here I am going to dumb it down for you because you look like you don’t know what you are doing, you know?

We were disheartened to read a similar story in Addo’s (2011) qualitative study about the overrepresentation of minority students in special education, which was conducted in Saskatchewan

I feel this every time I walk into a resource room classroom. It’s the stigma; the labeling: I’m dumb, I have a label, it’s not bad enough that I look different or sound different or have different ideas but now I’m dumb, I have no brain, no intellect...And for students especially in the teen area, they start to hate themselves…and it’s very, very sad. (p. 56)

These students’ observations align with research on the racialization of student ability (Pigott & Cowen, 2000; Dee, 2005), which has been shown to be a factor in ethnic minority student engagement. As referenced Tyler and Boelter’s (2008) study of African American students found a higher level of student engagement when teacher expectation of student ability was high. We should be concerned with the damaging effects on students who experience teachers’ deficit opinion of them. As Addo’s participant noted, students who are labeled in a deficit category “start to identify themselves with that” (p. 56). We agree, this is very, very sad.

If there is a ray of light in this, it is that not all students in these three schools where we had the discussion about racism agreed with their peers about teachers’ racist behavior. For example, one student perceived students as resisting teachers’ help: “I can list all the teachers in this school that help us. It’s just the students aren’t deciding to choose to take that help. They are denying it just because of their skin color” (S5). What is noteworthy about this statement is how it exemplifies how students emotionally and cognitively disengage from learning when they perceive their teachers to be unsupportive.

“…there was one time when it wasn’t even us and [teacher] blamed us.” Some students felt that Aboriginal students were viewed as trouble and perceived disciplinary measures to be exact and prejudiced when it came to them. A couple of students shared incidents they believed demonstrated racism “…a white kid bumped into me. I pushed
him back and we fought. And no one believed me. The principal did not believe me, so I got kicked out. Another student commented on the propensity to believe Aboriginal students may be involved with gangs. “That is stereotypical to say we are a gang because we are all wearing the same color. Maybe we just don’t like wearing bright colors that stand out. We just like wearing what we wear.”

There was the perception that when there was trouble, Aboriginal students were more likely to be assumed to be the culprits: “...there was one time when it wasn’t even us and [teacher] blamed us.” Elaborating on this incident, another student offered, “[Teacher] basically blames it on us. He kind of stereotypes us because some of us are Native.” These comments are poignant because research indicates that students who perceive teachers to be unsupportive of students who engage in “problem” behavior (e.g. being late for class) are also less emotionally engaged in school (Brewster & Bowen, 2004). Graham (2012) shared findings that Indigenous parents considered disciplinary actions against their children to be “nonsensical” (p. 10). The incidence of suspension and expulsion among minority students has been shown to be connected to the rate at which they are subscribed to special education programming. Gay (2000) noted that when students feel teachers are sensitive to the needs of ethnic minority groups, they are more engaged. Addo’s (2011) participants reported a perception that their behavior was misunderstood by teachers, resulting in disciplinary measures in circumstances where students felt it was inappropriate or egregious.

*Like the only time they ever get to play is when some girl gets hurt…* Some students felt that Aboriginal students experienced negative differential treatment and judgment because they were Aboriginal. Students shared examples of differential treatment around “acceptable” behavior, such as the student who shared this: “...the girls that made the team, like our First Nations was only two of them, and they like never get to play.” This student went on to say that the First Nations players were consistently the ‘back-up’ plan, “Like the only time they ever get to play is when some girl gets hurt and that’s about it. They just sit on the bench. This student said the coach later asked her to join the team. Her perception was that she was only invited after initially being cut because the coach realized he needed her, and her response was, “I am not going to go for a racist team.”

In one student focus group there was concern about how the negative behavior of some Aboriginal students implicated them all. One student stated, “Some of the Natives are making us have a bad name, like when they steal. Like that one girl who stole from Wal-Mart. Something like that.” This student went on to say, She is making us have a bad name. Making us all seem like we are thieves and all that.” Although some students resisted or challenged these negative experiences, they described the toll it took on them: “It’s almost if, just because we are Aboriginal students, we have to prove so much.” Jackson, Smith and Hill’s (2001) study showed that students experienced a cultural dissonance between home and school life. In their study, Aboriginal students also spoke about being negatively judged based on their racial identity. This was part of their schooling experience.

**What Helps Students with Their Learning**
Because our aim in this study was to gain an emic perspective about Aboriginal students’ learning, we asked these students: “What helps you with your learning? and “If you were given the power and authority to tell teachers what they should be doing to be awesome teachers, what would you tell them?” Overwhelmingly these students reported a personal connection and positive interactions with teachers helped their learning. Also, when teachers made efforts to ensure students understood the material, whether that was by providing extra explanation, tutorials outside of class time to help students catch up, or by creating an engaging learning environment, they contributed to students’ learning and performance. These themes are presented in vivo.

“It’s almost like they are, you know, friends, good friends or even uncles or brothers, like a family. That’s I think how school should feel…” In this theme students spoke about the importance of positive student-teacher relationships. These students described positive relationships in terms of teachers’ knowing them personally, and having a reciprocal relationship where teachers were willing to let themselves be personally known to students.

Student-teacher relationships have been documented as an important factor in Aboriginal students’ success in Silver, Mallett, Greene and Simard’s (2002) study in Winnipeg, Canada. Similar findings have emerged from research with Māori students in New Zealand (Bishop, Berryman, Wearmouth, Peter, & Clapman, 2012). As Tonkin’s (2001) work with six First Nations communities in British Columbia, Canada also demonstrated, connectedness is a protective factor for First Nations’ overall health. We were thus not surprised that these Aboriginal students talked about their relationships with teachers as helping their learning. One student suggested teachers should, “make more like a friend relationship with you—personal relationship. Like, actually get to know you and your background.”

These students perceived the benefit of having a personal relationship with teachers was that they would discern the students who were committed, and consequently, such teachers would take the time to understand them. For example, one student said, “If they know you personally, like they know most of their kids personally, they will know who wants to succeed…” Caring teachers were those who looked beyond students’ negative behavior, and made an effort to find out what was causing it: “They help you all the time, and they talk to you when you’re down.” These students’ appreciation for teachers who demonstrated compassion towards them was balanced by the recognition that when teachers did tell them to get to class or told them to be serious it was because they wanted students to “get a way better education.” One student explained to the group that if teachers did not bother to tell students to go to class, it would mean they did not care about the students’ success, “That all goes back to caring.”

These students also talked about making connections with teachers who were willing to disclose their personal side to students. The personal connection was enhanced for these students when teachers were equally willing to “just talk about themselves.” This finding aligns with students in Cooper’s (2014) study who claimed they liked teachers they could relate to on a personal level. In our study students shared examples that emphasized the notion of reciprocity. Along this vein, one student’s discussion of trust provides valuable insight:
I trust most of my teachers, but it’s a two-way thing where ...I will share stuff with them, but they share stuff with me. That’s why I feel comfortable enough to tell them stuff. It’s because, you know, they tell me about their past hardships...so I feel comfortable enough to tell them abut my life...other students, I don’t think, you know, they don’t even want to share the, “Oh, maybe I had a fight with my boyfriend over the weekend and that’s why I couldn’t get some stuff done, you know?” Like, that’s too personal to tell the teacher and they won’t understand, instead of going to them and like, “Oh, I just didn’t finish my assignment” and then the teacher kind of gives you heck for that. But when you know your teacher on a personal basis like that...to tell them, there is trust there, and then that takes some of the pressure off the institution of coming to school.

The ability to feel like an equal with teachers was important to this student: “I love when a teacher isn’t so much of an authority figure, but they come down on your level.” We noted in the First Nations school that students addressed teachers by their first names.

Finally, feeling validated by teachers impacted students’ perception of them as caring. Two students had opposite experiences with this, and both examples demonstrate the impact of a caring teacher on students’ school performance:

I usually got doubted by [Teacher], and he’s one of our teachers that I do not get along with. So I don’t [his] classes that much ‘cause there is that one point there he didn’t allow me in his class because of how my past was. So I don’t really bother with him anymore...he put me down and everything. Made me seem like I couldn’t do it.

Having a personal connection with teachers may enhance students’ emotional engagement (Connell, 1990). This affective dimension is important because of the way it intersects with behavioral and cognitive engagement (Cooper, 2014). These students seemed to connect with teachers who accepted them as “whole” persons, with personal lives and responsibilities. While some researchers focusing on ethnic minority groups found engagement to be higher when there were more minority teachers in a school (e.g. Finn & Voelkl, 1993), our findings resonate with Bingham and Okagaki’s (2012) conclusion that there is no clear cut connection between ethnic matching between students and teachers. What was conclusive for us, however, was that relationships with teachers were perceived to matter to these Aboriginal students’ experience of and performance in school.

“Feels like they want you here. When you are stuck they want you to get an understanding....and we should be challenging our creative minds.” In this theme students spoke about teachers’ spending time with them to explain material, teachers’ who are able to integrate creative and flexible instructional strategies, teachers’ who making learning fun, are enthusiastic about teaching and take extra time to help students with material.
These students reported that it helped with their learning when teachers spent time with them to further explain material and gave them extra time to catch up with schoolwork. When students reflected on this question, they said things like, “Whenever I was behind, [teacher] would always help me.” Falling behind in class seemed to be a concern for some. Statements such as, “They could try help us and say, ‘You could come in tomorrow at lunch and I will help you with this,’” and “Let us get caught up before they give us another assignment” reflected this. Some students shared examples of teachers who spent time with them outside of class to “help [them] get through.” “One-on-one teaching” was how one student described “being shown that the teacher actually cares.” About these kinds of teachers they said, “We need more teachers like that.”

“Good” teachers, according to some of these students, were genuinely concerned that students not only understand the material, but have opportunities to “utilize [their] skills.” They appreciated teachers who were creative and patient:

I am terrible with math, but [teacher] could figure out ten different ways to explain a problem...the fact that she was creative enough to think of something for every student to kind of figure out what she was teaching was really awesome.

The above statement speaks to the importance of Shulman’s (1986) pedagogical content knowledge, teachers’ ability to deliver material in a way that students can comprehend. We noted that supportive teachers increased one students’ enjoyment of school: “I loved going to his classroom because he would make sure that if I didn’t know what I was doing that he would take the time and teach me.”

In the qualitative phase of Cooper’s (2014) study, she quoted students describing learning as fun even when the material was difficult because of the way the teacher found a way to get through to the students. We noted this in our study in those students who were confident in their abilities and expected to be challenged. This was articulated in the following, “The class is getting bigger and bigger for AP (Advanced Placement) because more people want a bigger challenge.” The student further commented that, “My class is really accepting for anybody—like, all ideas work, and they are just a really good community ‘cause you know everybody there wants to excel in English…it’s fun.” These students enjoyed class when teachers practiced lively teaching and when they felt they learned a lot, similar to the students in the physics class Cooper studied.

Contrarily, while it was helpful “when teachers [were] exciting” these students identified teachers who lacked passion and innovation, and who were not willing to challenge the students: “They will basically hand out anything...And it’s, like real easy.” This appeared to discourage these students who described themselves as “curious.” Also like the students in Cooper’s (2014) study, these students expected time to be used efficiently so that they could learn. They were critical of teachers who shared irrelevant anecdotes: “I had this teacher and she always talks about the stupidest stuff, and it’s nothing to do with the topic...then you get into the conversation and you put your work back.” This student commented on the impact of the teacher going off topic, “Then when the day ends I didn’t even complete anything at all. So, it’s like, you should focus on the topic rather than getting off track.”
Something that does not seem to be discussed in the literature is the importance of teachers taking the initiative to offer extra help to students. We noted in some focus groups that students thought teachers should be “walking around and if they see you struggling come and help or something.” Students admitted to and witnessed in others shyness and feeling embarrassed. There was a fear of asking for help, as indicated. “Some don’t even know how to read or write and they are just too nervous to ask for any help. You ask them if they want help. They just say no.” This student went on to reflect, “And then if you ask are they doing okay, and they will say “yeah”, when really they’re not.” These students clearly knew it was detrimental when they did not seek the support they needed:

The reason I see why people skip is this: Because they get agitated and they can’t sit down for a long period of time. The work, they get stumped. They don’t know what to do, and they don’t want to ask for help so they get frustrated, and they end up, don’t know what to do, so just walk out, and that’s what they are known best for—just to stop. There are a lot of kids that have been dropping out this year ’cause it’s too hard.

Important, however, this did not trump some students’ hesitation to ask for help. This perhaps emphasizes the crucial role that a positive student-teacher relationship has on students’ academic performance.

Shyness in itself could contribute to a self-fulfilling prophecy whereby teachers’ low expectations of minority students becomes reality. In reflecting upon why some students do not ask the teachers for help, this student said, “They [students] might find themselves not smart. Maybe, yeah, scared, nervous.” Adding to that, another said, “Because they don’t know the teacher that well, too. So, bonds are important, too.” A comment made by another student reinforced how important it was for teachers to get to know students, and to understand why they were reticent: “You have to see it inside of them that they need help [rather] than them saying it because they are not going to say it.” One student’s comment warrants citing at length because he summed up both the importance of teachers initiating support, and the advantage assertive students have when it comes to getting help:

…just sending them home, like, what kind of education is that? It irritates me sometimes when teachers do that because you could interact with a kid and help him rather than just say, “Go home, no one wants you here if you are just going to sit and stand around.” Like, I could be standing around for a reason—because no one is trying to help me. Some kids do need support more than others. Some kids just support themselves, so it all depends on who you are....I don’t know, just able to stand up for yourself and ask for help because they just don’t come to you.

This student further described a classmate who was failing but would not seek help from the teacher because of a “grudge” between them. We frequently heard about students choosing to stay silent to avoid feeling “dumb in front of everybody just because [they] don’t get something.”
Thus, what teachers may misread as apathy in the classroom, these students helped us understand that intimidation and humiliation may explain why they do not assert themselves. Since evidence suggests teachers have lower expectations of students from minority backgrounds (Kesner, 2000; Pigott & Cowen, 2000), this is an important finding. If frustrated students exhibit negative behavior, it is this behavior, rather than intellectual capacity that becomes the focus. As Addo (2011) noted, if teachers do not bother to get to know their students personally and culturally, he/she may misunderstand them.

I hate when teachers say, “You’re in this class to learn, not to fool around,” and you’re learning, but then it’s good to have a little laugh once in a while….But they are real serious and then it makes the day go by slower.” This theme was all about teachers “lightening up.” We heard these types of comments in five of the schools we studied. Humor was one of the most common descriptions of what good teachers do, similar to what the students in Mr. Knowles’ physic class in Cooper’s (2014) study. Teachers with a sense of humor were reported to inspire students to “want to go to class more.” Most of these students shared examples of teachers who could “joke around” and “make it fun” because of their sense of humor. One student enjoyed the repartee with her teachers: “You use sarcasm with them and they use sarcasm right back.” A good teacher “knows how to take a joke.” These students also craved an environment in which teachers were “open minded” and willing to “compromise more.” A concrete example of this was being able to listen to music while they worked or being able to leave the classroom to have a “soft place to work instead of these hard chairs.”

Students in one school noted, “rules...are pretty strict.” In this same school, one teacher was regarded as “cool” because “he gives everyone a long leash unless you mess it up...” Although they did not resist rules outright, they did not like the way they were sometimes enforced. For example, one student said teachers should, “Stop being so harsh when they take you to the office.” In this same school, a student reported a teacher who took pictures with a cell phone when he saw students skipping school. This student expressed concern: “Like, we understand he is going to show the teachers and stuff, but what is he going to do with it afterwards? Is he going to delete it? “Cause we don’t know, it’s his personal phone.” The bottom line was that students were more positive about teachers who injected humor into their lessons, refrained from policing them, and de-institutionalized the learning process.

What Holds Students Back from Learning and What Teachers Should Stop Doing

Having discussed what helps students’ learning, in this section we share what we learned about what hinders these students’ learning. We asked them: (1) What kinds of things get in the way or hold you back from learning? and (2) What should teachers stop doing? Overwhelmingly, students reported issues at home, lack of family support, and personal circumstances outside of school as inhibitors to their learning. A second theme we interpreted related to teachers’ behavior toward students and their demeanor in the classroom.
“It’s tough to…put yourself out there for school when you are just trying to survive…” This theme identifies the bearing of out-of-school pressures on the lives of Aboriginal students and hence its effect on their positive engagement in school activities. In this theme, students spoke about having a challenging home life, unmet expectations by family members and the pressure to be academically successful amid an often chaotic home life.

We observed that students from almost all the schools perceived family circumstances and home influences as a factor that held them back from their learning. This was indeed a convergent response. Several of these students talked about a challenging home life, “Some of us grew up in a dysfunctional home,” and said what held them back was, “The way you live at home. The influences at home….living conditions and distractions.” Some described concretely how their home life impacted their school life, “It’s not our fault that we miss too much school...some of us have family problems.” Another student offered, “You know, like family-wise, there are a lot of broken families—alcohol and drug abuse.” This student went onto articulate the pragmatics arising from a challenging home life. “A lot of us can’t even get here, you know, like even just visiting [Teacher’s] class. A lot of us don’t have bus passes to get to school.” Other students told us about negative family influences they navigated, and how this affected them. The following student comment demonstrates this:

Growing up, my dad was a gangster...Two years ago I went to see him when he just got out of jail that day, and he asked me, “Do you want to join a gang? Do you want a tattoo?” He was pointing to where it was going to be, and I am like, “No, I’m good.” He gave us some money and just took off because I didn’t want to be around him at the time.

As a means of coping, students spoke about substance use. Some students were not able to circumvent what one interviewer described as the “cycle of addiction”: “You want to do drugs and all so you feel better.” Our study provided a snapshot into the challenges some of these students faced with respect to home circumstances, and how this affected them personally.

Some students shared their unmet expectations of family: “I think we need more family encouraging through sisters and brothers, but most family drink with siblings”; Some family members need to start asking what is wrong and what do you want out of life...The only time we talk is when it comes to holidays.” For some, lack of family role models instilled self-doubt: “Maybe no one graduated from your family and you think you can’t do it because no one did.” For others, hard times and the absence of school success in families motivated them to be the first in the family to graduate and/or to set a positive example for others. “None of my brothers graduated high school and I wanna be the first out of all my mom’s kids to graduate before my older brothers.” Another student offered:

I wanna graduate ‘cause my father left my mom when me and my brothers were just a little baby. We want to prove to our dad that our mom is like better, and strong enough to raise four children on her own...”
Conversely, the desire to overcome a negatively patterned history was double-edged. The fact that no one in their family graduated high school added pressure to perform, “My family is small. None of them graduated, which, I don’t know, fills me with anxiety or pressure...to...carry on with school.”

Research aiming to understand whether students of minority groups identify their peers as engaged, interested, or likely to be successful in school has produced some telling results. For example, Hudley and Graham’s (2001) study of African American and Latino students showed that both boys and girls were more likely to identify African American or Latino boys as unengaged, with more identification of African American girls as engaged. We were not exploring gender differences in perceptions; however, these findings interested us because we noted how students responded to family members’ experiences with school.

Thus, while the research suggests that a pattern of underachievement in school may negatively affect ethnic minority students’ perceptions of their own potential, we found the students in our study were motivated to break the pattern. One student, keenly aware of the experiences of Aboriginal people, said, “I don’t really want to accept that and I don’t want to like turn out to be just another statistic.”

We noted a couple of exceptions:

*My whole family—they always tell me education has been the most important thing in life*“ and “I come from a good family so I don’t really know anything about ...the struggles of needing to have someone bringing money in or anything like that.

The literature raises the issue of dissonance, or cultural discontinuity (Bingham & Okagaki, 2012) between the environments of school and home that minority group students must navigate (Davison & Hawe, 2012). Clearly, coping with an unhealthy and unsupportive home environment while juggling their own and others’ expectations for them to blaze a successful academic trail is considerable for many Aboriginal students.

*If they want respect, they should give us respect back.* This theme speaks to the way students perceived teachers’ treatment of them. Students commented on negative teacher behaviors as yelling and being inconsistent in what they expect of students and what they themselves are doing. Students also commented on the effect of teacher disengagement in the classroom dynamic.

To begin, several students in most of the schools reported disrespectful behavior such as yelling. As one student commented, “[Teacher] yells a lot.” Another student stated, *It embarrasses me when I get yelled at by a teacher.* These students also singled out teachers who they perceived as impatient and/or unfair: “Two minutes late, he is gonna start yelling”; “If you get mad at both of them [teachers]—office. They don’t even try talking to us about it. Right away—office!” Teachers’ yelling made them “uncomfortable.”

In thinking about the “yelling” behaviors of some teachers, several students identified inconsistency between teachers’ expectations of students and teachers’ own behavior, as in the following. For example, one student reflected on expectations of punctuality, “Some teachers are late in the morning and you are waiting outside your
Another student from this group chimed in, “And then you go for a walk and you get in trouble for being late when they finally show up.” (S3). Another student spoke about the ‘chicken or the egg’ dynamic:

Some of us get suspended for stupid reasons. Like when the teachers piss us off. When they get mad at us, and get us mad, then we get suspended for it. Like it’s our consequences…they expect us to act like adults when they treat us like children. (S4)

What also hindered these students’ learning was how teachers, “set off their moods. If they are feeling good, I will feel good. And if they are mad, I will feel mad,” one student explained. Many students commented on teachers being “grouchy.” One student said “[Teacher] just sits there and she is angry, and stares at her computer….I swear, I have only seen her happy once.” There seemed to be some resentment over the fact that teachers did not conceal moodiness in the way students were expected to, as indicated by the following the following statement, “Just because they had a bad day and got into an argument with someone, they don’t need to get mad at us, taking it out on us…” The student went on to provide this insight, “They say, ‘Leave your problems at the door.’ But how are we supposed to do that when [they] are yelling?”

Student comments reflected a perception of some of their teachers not being fully engaged in their job as teachers. Some said teachers “[gave] them attitude.” They hypothesized that unhappy teachers disliked their job. The significance of this perception is inferred by this student’s response to the interviewer’s question: “Why do you think they say that [they don’t want to be here]?” “Because they say that they don’t wanna be here: ‘You don’t want to be here? Well, I don’t want to be here either’” (S2). These students’ ability to detect when teachers had passion has been noted elsewhere (e.g. Cooper, 2014). Importantly, these students were not fooled by inauthenticity: “They can go cold to warm in a blink of an eye when the principle comes around.” Their perceptiveness about how teachers felt about them was further demonstrated by their discussion of teachers’ pets, our next theme.

“Some of them are her favorites. On her good days she likes me…other days, she is not so crazy about me.” In this theme students focused on the poignancy of the “teacher’s pet” phenomenon. In further thinking about favoritism students commented on the advantage given to students with an already high academic standing.

We learned from these students that a good teacher was “a teacher that pays attention to all of their students.” We also learned from these students that “teacher’s pet” is not a thing of the past: "They say they like you. You are not a problem, but actions prove those wrong. They don’t realize that we understand more than they think we do.” These students made us aware of teachers who “totally pick favorites.” Hierarchy of student cliques was a common explanation for this:

…this semester is almost done and [student] is not gonna pass. The second time doing that class and all because every time she wants to ask for help, or every time she does ask for help or I ask for the teacher to come over by us and explain it to the two of us or something, then she is
always like too busy helping all the little preppy kids behind me, you know? (S5)

Other students described similar experiences of trying to get help and being overlooked by teachers who were focusing on what was perceived to be favorites. This student gave this example, “...hand up and they are like walking past you and helping other kids, and you are just chilling there waiting.”

Some students perceived academic standing as the reason for differential treatment as explained here, “...a teacher will be helping all the A+ students and then leaving the failed students behind. A student from another school echoed a similar perception that teachers are more interested in smart kids:

...it also depends on how they (teachers) treat you. Like, oh, this kid’s smart, maybe he will actually understand or she will actually understand, then they will give them like, oh, teacher’s pet, you got this right. I will give you another assignment and then the rest of the kids that are struggling.

Poignant was that these students observed that teachers’ liking or not liking them was set in stone: “If you are on her bad side, you are on her bad side.”

Research on minority student engagement suggests that teachers’ reports of student engagement differ from how students themselves perceive their experiences (Shernoff & Schmidt, 2008). The candidacy with which these students in our study spoke about feeling inferior to “preppy” students and the awareness of implied negative stereotyping that undergirds teachers’ actions confirmed our suspicion that educators’ good intentions may not create positive experiences for Aboriginal students.

“[Teacher] quickly gives you the work and just sits at his desk….He doesn’t really communicate with you.” Although we could have included this theme under the earlier one regarding teachers treating students respectfully, we felt it was important to isolate this idea because while there is significant literature based on engaging pedagogy, lively teaching, and culturally sensitive teaching (Demmert & Tower, 2003; Casagno & Brayboy, 2008; Bishop & Berryman, 2010), the idea that joyful, passionate teaching seems almost taken for granted. In our study, the theme of the disengaged teacher arose clearly in the conversations.

We were not prepared to hear descriptions of disengaged teachers such as the following, “...[teacher] just handed me a book and then expected me to know everything. So now I go to a different school.” Another student remarked, “They just make you do work. Just give you work and just does his own thing.” We frequently heard about teachers who presented a lesson then retreated to their desks and became preoccupied by their computers, or were “always on their phones.” Or as this student observed, “When she is done she just hands out the assignment and sits down...and goes on her computer to do teacher things.”

Teachers who appeared to these students as disengaged did not provide the kind of academic support these students required. These comments reflect this: “We just usually ask [teacher] a question and then they will give us a brief answer, and then we
Another student noted that teachers can move from a passive disengagement to active frustration when students require assistance, “They always say that if you need help, ask for it, but when you do, they get frustrated in trying to teach you when they shouldn’t.” Several students reported that it helped their learning when teachers explained lessons in alternative ways. It was perhaps unsurprising that they perceived teachers who did not make this effort as unhelpful:

The grouchy ones don’t like being here. They don’t like being surrounded by a bunch of kids who they think are simple. But really, it’s their teaching....It’s not our fault. It’s their teaching. They don’t explain it to us, and when we don’t understand they get mad. (S4)

Considering what engages Aboriginal students in learning, scholarship on culturally sensitive schools has been informative, as noted in our earlier overview. While we did not impose this specific discussion upon the students in our focus groups, the topic emerged in one urban provincial school, and is worth sharing here. Within the discussion of racism and negative stereotyping of First Nations people, students commented on the absence of “Cree classes and Saulteaux classes.” These students argued for teachers to, “Teach us to respect the culture, teach us how to talk so we could help our family with that...why can’t they have these studies here?” Another student critiqued a course for emphasizing European perspectives: “They are just focusing on the European part of you, and they never taught us about residential schools or anything.” Another student further reflected on what was offered at this school, and held a contrary position:

They should call it Indigenous History because they are teaching us the history. As an Aboriginal person you are going to that class and all they teach us is the hardship that we went through and the hardship we are going through in present day. And they are not so much teaching us about our identity and who we are. I think a lot of the—especially like Native Studies—they don’t, well, I actually think all across Canada they don’t point out the uniqueness of each culture.

A different student extended her critique to the school environment:

This school barely has anything to do with Aboriginal students at all. Like the mascot. We are working on that in Native Studies about trying to change the mascot because like in 1984 or something there was a European man—he was wearing a headdress and everything to do with First Nations people, and so I found that kind of really racist.

We know from the literature that whether and/or how students self-identify with their cultural identity can make a difference to their school performance and experience. Earlier work by Cooper (2012) for example, concluded that Latino high school students experienced the strongest engagement in classes that not only emphasized positive aspects of their cultural identity, but also countered negative stereotypes. In our study, a
teacher’s unwillingness to discuss Idle No More, an important movement initiated in Saskatchewan, or the Eurocentric focus on history were perhaps lost opportunities for these students to connect with and develop pride in their heritage. We heard from some students that teachers avoided discussions about residential schools, arguably among Canada’s most egregious violation of civil rights. Contrarily, others felt that native studies classes were preoccupied with this, reinforcing the “hardship” as the above student noted. These approaches, as well intentioned or unaware as teachers may be, have real effects on students’ ability to understand and identify positively with their Aboriginal culture. Clearly, some of the students in this school craved deeper understanding of their cultural historically, as well as an opportunity to rescript Aboriginal people’s reputations in light of contemporary, internationally recognized movements. Given the uniqueness of Aboriginal people’s experiences historically and presently in Canada, we realize a need to theorize the literature on identity formation within our context. These students serve as a prompt for future research in this direction.

**Conclusion**

Like in the U.S.A., minority children in Canada are at greater risk of being disengaged from school and ultimately, of dropping out. In Canada, Aboriginal students are more likely to leave school. With respect to First Nations students, they are also more likely to experience associated negative physical and emotional health consequences, such as higher rates of substance abuse and suicide (Covell, cited in Grover, 2002). Among the reasons claimed in the research for the disproportionately low rate of school success for Aboriginal youth compared to non-Aboriginal youth were factors discussed by the students in our study, namely, racism, disconnection from teachers, lack of supportive relationship in home and the plausibility of an Indigenous counter narrative from which to see their own lives.

In reflecting upon the conceptual framing of this research from a culturally responsive pedagogical perspective (Demmert & Towner, 2003; Bishop et al, 2012) and how this approach may assist our understanding of Aboriginal student engagement, we have found that relationship is imperative. The power of racism to contaminate positive relationship building was addressed by students. Some students confirmed the pain of a racialized world that advantages one group over another based on race and ethnicity. From their own words, those students felt what researchers have theorized regarding the deficit assumption that constitutes teachers’ treatment of Aboriginal students. Aboriginal students in this study spoke of being problematized as troublesome. Their perception was that this was based on race. Other Aboriginal student perceptions communicated the felt experience of being a second-class student.

When we asked students about what helps with their learning students spoke about the power of caring, supportive teachers that took time to know each student as a unique individual. They were candid that this included the challenges that they may face in their lives due to dysfunction at home or having to support themselves living

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3 Idle No More is a mass movement of peaceful resistance to neo-colonial policy and practice, and positive action for environmental stewardship, honoring of Treaties, and equality between Indigenous and non-Indigenous communities. The movement started in Saskatchewan in December 2012 with a teach-in, and was a response to a Government of Canada omnibus bill, Jobs & Growth Act, 2012 (Bill C-45), perceived to threaten to environmental sustainability. See [http://www.idlenomore.ca](http://www.idlenomore.ca)
independently. It was not only the student-teacher relationship that was deemed important but also whether a teacher viewed their teaching life as positive and rewarding. Aboriginal students wanted to be respected, cared about and valued by their teachers. They desired teachers who cared about teaching.

When we asked students about what hampered their learning, they were resolute in their perspective that it was not only their in-school experience but the influence of their home life. In considering ‘wrap-around’ factors that influence school engagement, we were mindful of Douglas and Gingrich’s (2009) research that indicates that almost half of Aboriginal children and youth in Saskatchewan live in poverty. Poverty and the associated stress are implicated in a challenging familial home environment. The Aboriginal students in this study spoke about home life the “living conditions and distractions.” For students from disruptive homes the effort of finding their way to school on a daily basis is an indicator of a resilient spirit seeking engagement. In reflecting on their home life, several Aboriginal students spoke about unmet expectations from family and the desire for family to ‘step-up’. Our findings suggest that family matters. In reflecting upon school culture and curriculum, Aboriginal students desired a contemporary understanding of their life. In particular, they were interested in seeing Indigenous culture portrayed as confident and enduring rather than meek and vanishing.

In conducting this study, we hoped to offer an infrequently sought after vantage point for understanding the complexities that seem to challenge Aboriginal education (Castagno & Brayboy, 2008). We are grateful for the candidacy of the Aboriginal students in this study in sharing their experiences and for shedding more light on issues that obviously still demand our attention. This emphasizes the importance of our descriptive work. A secondary, but equally important, aim was to further the “Student Voice agenda” (Czerniawski & Kidd, 2011, p. xxxv). We know this agenda has been taken up elsewhere and in some cases is disappointingly abandoned with change in leadership (Cheminais, 2011). Our own work has been inspired by colleagues’ success in New Zealand (Bishop & Berryman, 2010); our hope is to similarly cast new light on long shadows.

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1. **Title of the submission:**
Teacher preparation as praxis: A Latina *testimonio* in two voices

2. **Topic Area of Submission**
Teacher Preparation

3. **Presentation Format**
Paper Session

4. This Latina *testimonio* acknowledges how ethnicity, language and power shape learning in literacy courses grounded in social practice theory. Qualitative data from “teaching as research” are reexamined to understand the role of “knowledge, practice and being” (Dall’Alba, 2006) in preparing teachers to teach children academic literacies beyond their reach, according to standardized test scores. This analysis contributes to discussions of worthwhile teaching practice in recognizing the significance of emotions and embodied learning in learning to teach.

Paper author: Carmen I. Mercado, Ph.D., Professor Emeritus, The City University of New York at Hunter College School of Education; cmercado@hunter.cuny.edu with Ms. Marceline Torres, Retired New York City Public School Teacher and Supervisor
1. **Title of the submission:**

Learning to Teach and Teaching to Learn: A Latina testimonio in two voices.

2. **Topic Area of Submission**

Teacher Preparation

3. **Paper Session**

4. This *self-study* (2008-2010) of a reading methods course illuminates challenges and possibilities of addressing educational inequality under No Child Left Behind. Guided social learning processes teach how to use quality multicultural literature to create informative and engaging preview scripts, and sequential mini lessons focused on mandated skills. Theories of social practice, role of emotion in learning and LatCrit theory explain positive changes in participants' teaching practices, knowledge and embodied knowing within sociopolitical constraints.
Title:
Improving the Capacity of Ohio Institutions of Higher Education to Prepare All Educators to Meet the Needs of All Learners

Topic Area:
Special Education

Presentation Format:
Paper Session – Work in Progress Report

Description:
This presentation will focus on a project to develop university teacher education candidates that are better qualified to teach students with disabilities and other learning difficulties. It will showcase a model that infuses all the Council for Exceptional Children (CEC) standards into middle childhood and department wide courses so that candidates can graduate in four years better able to meet the needs of all learners in their classroom.

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Abstract:

The Department of Education at the University of Dayton, Dayton, Ohio, was awarded the *Improving the Capacity of Ohio Institutions of Higher Education to Prepare All Educators to Meet the Needs of All Learners* grant by Ohio Dean’s Compact for Exceptional Children.

The goal for our grant project is to develop general education middle childhood candidates that are better qualified to teach students with disabilities and other learning difficulties. This will be accomplished through a collaborative effort and with support of the grant.

Our presentation will report on how we are meeting our goal by showcasing our efforts on the following tasks:

- Analyzing our current dual licensure model for early childhood education and early childhood special education licensure in our four year undergraduate program;

- Revising the early childhood model to meet the needs of the middle childhood program;

- Expanding the special education program to allow middle childhood candidates to earn special education credentials leading to a university issued special education focus area certificate;

- Aligning and infusing the Council for Exceptional Children standards within eight program area and department wide courses;

- Compiling a resource center of artifacts, materials and modules, including but not limited to the on-line learning resources of the Ohio Leadership Advisory Council; and,

- Building a module that showcases a viable model for restructuring existing early childhood and middle childhood programs to make candidates better qualified to teach students with disabilities and other learning needs. This module will be made available to other IHEs.

At the completion of our project, the University of Dayton will have established programs in two licensure areas that will both allow candidates to simultaneously earn program credentials as well as credentials qualifying them to teach students with disabilities and other learning needs. Our early childhood candidates will have the opportunity to earn dual licensure in both general and special education. Our middle childhood candidates will earn their middle childhood general education licensure with two academic focus areas while simultaneously being prepared to meet the demands of students with disabilities and other learning needs through the infusion of the Council for Exceptional Children standards into their coursework and field experiences.
Preparing for High Risk Low Frequency Incidents on College Campuses

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Abstract

Active Shooter Incidents (ASI) are a reoccurring and all-too-familiar trend in the United States. The role of Institutions of Higher Learning (IHL) administrators is vital to the overarching preparation of policies and procedures for an effective response to ASIs. IHL administrator’s support of Educational Law Enforcement is marginal; partly due to political power structures within the Universities. Due to the increasing awareness of the consequences of an ASI, it is becoming more apparent that the IHLs must be better coordinated to prepare for High Risk Low Frequency Incidents.
Dedication

This research is dedicated to my partner and friend, Keith Lawrence, an Officer at the University of Southern California Department of Public Safety. Keith and his finance Monica Quan, were brutally murdered by the deranged Urban Terrorist, Christopher Dorner, on February 3, 2013 in the parking garage next to their apartment at Concordia University in Irvine California.

Dorner’s cowardly acts truly speak to the theme of this research: it is not “IF” an Active Shooter happens it is “WHEN.”
Problem Statement

Institutions of Higher Learning (IHL) political power structures have historically had an impeding effect on Educational Law Enforcement. As High Risk Low Frequency incidents such as Active Shooter Incidents, become more prevalent, funding to improve the capabilities of Educational Law Enforcement is necessary to meet the threat.

Active Shooter Defined

An Active Shooter is defined by the U.S. Department of Homeland Security as:

"An individual(s) actively engaged in killing or attempting to kill people in a confined and populated area; in most cases, there is no pattern or method to their selection of victims."

Active Shooter Incidents in Institutions of Higher Learning

The fear of an Active Shooter Incident (ASI) continues to be a focus of many IHL administrators; the ability to adequately prepare and respond to an ASI depends upon the capabilities of educational law enforcement personnel. This researcher found a lack of peer reviewed literature on decision making, problem solving, and solutions for ASIs for university campuses around the United States. This is surprising as ASIs are a reoccurring and all-too-familiar trend on college campuses in the United States (Schweit, 2013, p. 1).

In the FBI study, *A Study of Active Shooter Incidents in the United States Between 2000 and 2013*, the FBI researched 160 Active Shooter Incidents over the last 14 years, this research indicated 24.3% of the ASI’s were in educational settings with 24 ASI incidents in schools and 12 incidents in IHL’s (Gray, 2014). The FBI study also revealed a developing and disturbing trend; in the first seven years of this study, 2000 to 2006, there was an average of 6.4 incidents per year. However in the last seven years, 2007 to 2013 the number of ASIs increased to 16.4 ASI incidents a year (2013).
To properly prepare for critical incidents on college campuses; educational law enforcement agencies must have the unwavering support of the IHL administration. This will require a significant culture shift for most IHL administrators. To prepare for High Risk Low Frequency Incidents, IHLs need to professional equipment and training for Educational Law Enforcement.

As a practice, Educational law enforcement has been shown to be under funded and under trained to adequately respond to High Risk Low Frequency Incidents (Wagner, 2010, p. 165). To improve public safety on college campuses, it is essential that IHL administration implement a constructive process to improve Educational Law Enforcement capabilities.

The increasing need for financial resources require the understanding of IHL power structures to ensure that public safety is properly funded. To ensure there is adequate funding, IHL and educational law enforcement executives need to collaborate when developing budgetary needs for the public safety issues on campuses (Shockley-Zalabak, 2011, p. 52).

The cost of hiring and equipping law enforcement personnel, as well as the training required to develop increased capabilities, are at the forefront of the Active Shooter topic. In Dr. Lee Wagner’s study; “The Levels of Authority Among California Community College Police Chiefs,” he identifies issues that continue to limit the ability to prepare for active shooters on
PREPARING FOR HIGH RISK LOW FREQUENCY INCIDENTS ON 6 campuses. Wagner found public safety budgets were consistently a low priority in California Community Colleges. Wagner’s study suggests these budgets favor instructionally oriented resources (Wagner, 2010, p. 163).

Active Shooter Threat

Active Shooter Incidents are on the rise with 160 incidents between 2000 and 2013, an average of 11.4 yearly (FBI, 2013, p. 6). Other FBI research indicates the rising ASI trends between 2007 and 2013 have increased to 16.4 incidents per year (Gray, 2014). This FBI research is disturbing. However what is more distressing is the reality that an active shooter suspect shoots someone every 15 seconds (Perry, 2009, p. 1). When preparing budgets, IHL administrators should recognize these statics as a stark reality and fully understand the significant consequences of not preparing educational law enforcement to respond to High Risk Low Frequency incidents.

Table 2
IHL administrators need to have a straightforward conversation with their public safety executives to determine if there is appropriate staffing levels and equipment to respond to critical incidents. A vital topic that needs to be discussed is that the lack of capability to respond to ASIs will result in increasing student, faculty and staff deaths.

Educational law enforcement experts agree that the lack of resources and personnel are the major factors in the capability to effectively respond to critical incidents (Wagner, 2010, p. 163). With over 4000 IHLs serving nearly 16 million students, campus safety has never been more important in today’s college communities. The inclusion of educational law enforcement executives in the preparation of IHL budgets will improve campus safety funding, resulting in an increased level of professionalism in campus law enforcement (Wagner, 2010, p. 18).

**Political Power Structures in Institutions of Higher Learning**

Wagner’s research indicates professional relationships between IHL and educational law enforcement administrators must be better developed to ensure the capability to respond to High Risk Low Frequency incidents. Moreover, there must be an unequivocal partnership between the IHL and educational law enforcement administrators (Wagner, 2010, pp 164-166).

Unfortunately and all too often, public safety is poorly equipped and has inadequate training (Wagner, 2010, p. 164). This limiting factor does not allow educational law enforcement the ability to effectively train for or respond to High Risk Low Frequency Incidents.

Wagner’s research found IHLs rely on the local police for critical incident responses; further the poly-centric power structure of IHL administrators does not understand the authority needed for Educational Law Enforcement to effectively respond to critical incidents. Moreover, Wagner’s study identified that IHL administrators work against the implementation of
communication practices that would give educational law enforcement the financial resources to effectively respond during campus emergencies (Wagner, 2010, p. 164).

Relying on local police to be the primary responders to High Risk Low Frequency Incidents on college campuses is inherently flawed. Local incidents such as civil unrest or natural disasters require municipal police assets to handle such emergencies. This will cause a delayed response to the college community if they also experienced an incident. As a result, in civil unrest or natural disaster incidents, IHLs will be left to handle emergencies with limited or no municipal police assets, and campus public safety officers would be the first responders.

This researcher experienced this phenomenon firsthand during the Los Angeles Riots in 1992 while working at a university in Los Angeles. During this crisis, LAPD was fully deployed on a Tactical Alert and did not have the resources or manpower to provide protection to the university. The security and protection of the university was left to the university’s Department of Public Safety.

Fortunately the campus escaped the riot with little to no damage as the Public Safety Officers met the challenge during that crisis. However, the lessons learned from the Los Angeles Riot in 1992 inspired significant change in that department; including a bigger budget, more manpower, additional training and resources for the Officers.

This type of reaction is typical with IHL administrators. Often, campus politics and apathetic voices concerning public safety, dominate the conversations when discussing Public Safety budgets. It is all too common that it is only after a critical incident, will IHL administrators support the budgetary needs of educational law enforcement (Wagner, 2010, p. 165).

Impact of a Critical Incident
The publication of the Jeanne Clery Act provides greater awareness of crime on campus. The Clery publication highlights the need for emergency preparedness to deal with emerging threats (Walters, 2013). The Clery disclosures, combined with frequent media reports of ASIs continue to have a negative impact on some Colleges and Universities ability to recruit and retain students.

The FBI found in its research, Active Shooter Incidents happen in small, medium and large campus communities. Moreover, ASIs occur in all economic areas and no campus is immune to the potential of an ASI (Schweit, 2013). A very disturbing trend shows that between 2006 and 2013, the frequency of ASIs have increased with an average of 16.4 incidents per year (Gray, 2014); emphasizing that it is not if an Active Shooter will happen, it is when.

**Active Shooter Profile**

The challenges of identifying Active Shooter suspects prior to an incident are concerning. FBIs research indicates a profile on Active Shooters does not exist. Therefore, we are unable to criminally profile potential active shooter suspects. Inasmuch, ASIs have the potential of occurring in any campus, in any community, at any time (Schweit, 2013).

The immediate response to an ASI is paramount to educational law enforcement’s ability to protect the campus community. The appropriate preparation and training for campus public safety professionals require IHL administrators to fully understand the consequences of not preparing for an ASI. With the understanding that statics indicate an active shooter shoots a victim every 15 seconds; funding, training, and resources for public safety is vital to mitigate the loss of life during an ASI.

The ASI at the University of Florida (FSU) on November 20, 2014 is an example of how the loss of life can be limited. In the FSU ASI, the shooter was engaged and neutralized by the
preparing for high risk low frequency incidents on campus police within two minutes of the initial call; the response of Campus Police limited the injuries to three victims. Considering the suspect was reported to be mentally unstable and was randomly shooting students in the library during peak hours, the situation could have been much worse without immediate intervention by campus police (Cotterell, 2014).

**Institutions of Higher Learning Responsibility**

IHL administrators are involved in planning, organizing, directing, controlling and evaluating activities of departments within the Universities including educational law enforcement. IHL administrators are also responsible for the budgetary support, leadership and oversight of campus public safety departments (Wagner, 2010).

Perception of campus public safety is not consistent within educational law enforcement departments. Some agencies enjoy a positive relationship with IHL administrators, while others have a less than desired relationship. In Dr. Lee Wagner’s dissertation titled *Levels of Authority Among California Community Colleges Police Chiefs Regarding Active Shooters on Campus*, Wagner found that levels of authority were inconsistent among Community College Police Departments (Wagner, 2010, p. 165).

Dr. Wagner’s research found some educational law enforcement agencies had good relationships with IHL administrators, while others had less than optimal relationships (2010). This factor had a significant impact on some department’s abilities to prepare for High Risk Low Frequency Incidents in California. The majority of the panelists in Dr. Wagner’s study reported budgetary constraints, lack of personnel and poor equipment and training had a negative impact on public safety (Wagner, 2010, pp. 162-164). Dr. Wagner’s study indicated that funding for California college public safety was a low priority within most California Community College districts (Wagner, 2010, pp. 163-164).
A quote from a panelist in Dr. Wagner’s study summed up the prevalent theme when referring to budgetary issues. (Wagner, 2010, p. 164).

"Police departments and public safety in general, are not considered essential when dividing budget monies. Instruction always takes the lion's share of the available funds."

The panelists referenced in Dr. Wagner’s dissertation agree that to properly prepare for a High Risk Low Frequency Incident on campus, there needs to be an increase in manpower, equipment and training to handle the severity of these incidents. Further, without an increase in budget, the ability to respond to High Risk Low Frequency Incidents will be compromised (Wagner, 2010, p. 167).

Local law enforcement agencies also play an important role in the effectiveness of an ASI response. Dr. Wagner’s research indicated cooperation between campus public safety and the local police agencies were inconsistent. Wagner’s study revealed most panelists reported good relations with local police agencies, while a minority expressed fair to poor relationships with community public safety partners. The primary cause of the conflict was reported as a lack of communication between the agencies (p. 167).

With larger municipal or county agencies, some agencies developed a sense of arrogance toward educational law enforcement, further the municipal or county agencies made little effort to establish professional relationships with their college law enforcement partners (Wagner, 2010, p. 165). Without professional working relationships between local police and educational law enforcement agencies, the need for a properly trained and equipped educational public safety agency is imperative.

**Institutions of Higher Leadership**

Educational law enforcement agencies have a responsibly to the university community to be a professional policing agency. They must enforce laws and reduce criminal activity in
university communities (Pope, 2011, p. 2). Unfortunately, IHL administrators sometimes interfere with educational law enforcement on campus.

In a horrific example, we can look at Penn State University’s sex abuse scandal, where the actions or inaction of the Campus Police were at the forefront of the investigation (Hopkins & Neff, 2014, p. 125). The overarching question in the scandal was why the Campus police were not notified at the time of the incident. Penn State employees from janitors to the coaching staff subverted law enforcement and reported the incident to other university officials. As a result Sandusky’s predatory actions lead to multiple sexual assaults against pre-adolescent boys; many of which occurred on campus from 1996 to 2011("Sandusky sex abuse case," 2011).

Communication

Uncoordinated leadership combined with lessons learned from uncooperative command structures, emphasize the need for effective communications between IHL administrators and educational law enforcement. Further, effective communication is vital to educational law enforcement’s successful response to High Risk Low Frequency incidents (Donahue & Tuohy, 2006).

In a shooting on December 13, 2013 at Arapahoe High School in Centennial Colorado, a school security officer claimed administrators ignored, and or punished officers who raised concerns relating to security issues (Torres & Brown, 2014). Disturbingly, another security officer reported campus administrators were previously made aware of Karl Pierson, the suspect in the Arapahoe High School shooting. Security officials told school administrators Karl used the internet to research guns and had made a death threat against his debate coach. Shockingly, the administration did not take the threat seriously before the incident ("2nd Security Officer Claims Arapahoe High Still Has Security Issues," 2014).
**Threat Assessment**

As we see from the Penn State and Arapahoe incidents, these administrators subverted and manipulated educational law enforcement and their efforts to effectively address security issues on their campuses. Lessons should be learned from these tragedies; security issues need to be addressed by appropriately trained personnel, who understand how to evaluate and assess threats. It could be argued, if Arapahoe High School leaders would have taken a more active approach to address the threat, this deadly situation could have been avoided.

In another incident, a campus catastrophe was averted by the decisive action of IHL leaders. In this case study, Jared Loughner, a Pima Community College student, was suspended from college due to his aggressive and odd behavior. After faculty and students expressed concerns regarding his behavior and five separate confrontations with Campus Police, Loughner was placed on suspension for violating the student code of conduct (Johnson, 2014, p. 22).

Tragically, three months after Loufhner was suspended, he shot Congresswoman Gabrielle Gifford as well as killing six and wounding 16 others. In this case the violence still occurred. However, faculty, staff and students at the college were not targeted due to the decisive action of IHL administrators and campus police (Christie & Spafat, 2012).

**Decision Making for High Risk Low Frequency Incidents**

Preparations for High Risk Low Frequency incidents are, by their nature, difficult for IHL administrators to comprehend. As a result, the inherent value of providing appropriate funding to training and equipment for educational law enforcement is not easily understood (Wagner, 2010).

The challenge in developing a standard operating procedure for all educational law enforcement departments is that duties, responsibilities, and training vary between IHLs. On one
hand, there are well trained and properly equipped police officers that provide public safety for their university community. While in other universities, there is sub-standard equipment and inadequate budgets, resulting in untrained security with the inability to provide adequate service to their communities (Wilson & Wilson, 2011).

Budgeting for High Risk Low Frequency incidents can be challenging when public safety is not a priority. However, when IHL administrators take a broader view of public safety, educational law enforcement departments have the budget to equip and train officers to respond to High Risk Low Frequency Incidents (Wagner, 2010, p. 163). Unfortunately in reality, all universities are one incident away from being a featured story in the media. Inasmuch, the mind set in preparing for High Risk Low Frequency incidents must change. It is not “if” an Active Shooter will happen it is “when” it happens.

**Active Shooter Trends**

A 2011 FBI study shows an increase in ASIs between 2000 and 2013; there were more than 16 incidents per year between 2007 and 2013. This trend is a significant increase from six incidents per year in the first seven years (FBI, 2013, p. 6).

Active Shooter incidents are shaping the culture in education law enforcement today. In Table 3, we see ten incidents that have shocked the IHL administrators, creating a shift in public safety expectations on college campuses around the United States (Walters, 2013, p. 13).

**Table 3 High Profile Violent Crimes Occurring On U.S. Colleges Campuses**

<table>
<thead>
<tr>
<th>DATE</th>
<th>LOCATION</th>
<th>VICTIM(S)</th>
<th>PERPETRATOR</th>
</tr>
</thead>
<tbody>
<tr>
<td>8/1/1966</td>
<td>University of Texas</td>
<td>13 killed, 32 wounded</td>
<td>Charles Whitman, Student</td>
</tr>
<tr>
<td>5/4/1970</td>
<td>Kent State University</td>
<td>4 killed, 9 wounded</td>
<td>National Guard fired on unarmed students</td>
</tr>
<tr>
<td>7/12/1976</td>
<td>Cal State</td>
<td>7 killed</td>
<td>Edward Allaway</td>
</tr>
<tr>
<td>Date</td>
<td>Location</td>
<td>Cause of Death</td>
<td>Location Type</td>
</tr>
<tr>
<td>------------</td>
<td>-----------------------------------</td>
<td>----------------</td>
<td>-------------------</td>
</tr>
<tr>
<td>4/5/1986</td>
<td>Lehigh University</td>
<td>1 killed</td>
<td>Custodian</td>
</tr>
<tr>
<td>1/16/2002</td>
<td>Appalachian Law School</td>
<td>3 killed</td>
<td>Student</td>
</tr>
<tr>
<td>12/13/2006</td>
<td>Eastern Michigan University</td>
<td>1 killed</td>
<td>Student</td>
</tr>
<tr>
<td>4/16/2007</td>
<td>Virginia Tech</td>
<td>32 killed</td>
<td>Student</td>
</tr>
<tr>
<td>2/14/2008</td>
<td>Northern Illinois University</td>
<td>5 killed</td>
<td>Student</td>
</tr>
<tr>
<td>2/12/2010</td>
<td>University of Alabama-Huntsville</td>
<td>3 killed</td>
<td>Faculty</td>
</tr>
<tr>
<td></td>
<td></td>
<td>25 wounded</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>21 wounded</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>3 wounded</td>
<td>Faculty</td>
</tr>
</tbody>
</table>

**Conclusions**

The data in table 3 represents just a few of the campus communities that have been irrevocably changed by the tragic loss of life as a result of an ASI. IHL administrators need to evaluate their educational law enforcement agencies to determine if best practices are being used to prepare for High Risk Low Frequency Incidents.

With the reality of limited funds, competing financial priorities and increasing budgetary constraints, public safety funding continues to be a low priority for many colleges. Unfortunately, it is not until there is a tragic event on campus that IHL administrators realize the importance of adequate funding for campus safety departments.

In the Active Shooter Incident on November 20, 2014 at Florida State University, Campus Police were on scene and neutralized the threat in less than two minutes, limiting the casualties to two students and one staff member (Cotterell, 2014).
Without the immediate response of FSUs Police, this incident could have been considerably worse given the fact there were hundreds of students in the library studying. The FSU incident is a shocking example of the unpredictable nature of an Active Shooter. The suspect in this incident, Myron May, was a FSU alumnus and a practicing attorney (Cotterell, 2014); far from the image of a mentally ill, homicidal killer.

With more than 4000 college campuses in the United States, in comparison, ASIs are low frequency incidents (Wagner, 2010, p. 18). It is somewhat understandable that many IHL administrators view ASIs as isolated incidents and have not felt the pressure to increase spending on public safety. However, when we look at the lessons learned from past ASIs, the lessons are always the same. There is not a profile for Active Shooters; Active Shooter Incidents are unpredictable and can happen anywhere in any community and the consequences will have a significant negative financial impact on the institution, through the loss of enrollment, retention and litigation.
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**Title:** Non-Remedial Support for Algebra Students: Using Technology with a Modeling Approach

**Topic Area:** Mathematics Education

**Presentation Format:** Paper Session

**Description:** (75/75 words)
Technology and a modeling approach to learning mathematics provide mathematically rich experiences for students needing support to learn algebra concepts. This session describes how students are given opportunities to think deeply about and to make sense of the mathematics they are learning through the use of a modeling cycle, the embedded use of technology, well-designed tasks, and discussions to communicate and negotiate their mathematical ideas. Examples of tasks along with student work will be shared.

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Abstract:
Curriculum materials have been created to support struggling learners by emphasizing modeling as mathematical content and practice 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). The lessons include a digital component with documents and links that can easily be embedded with them so that technology can greatly enhance the learning experience for students. These materials were developed by the Curriculum Research & Development Group for a non-remedial mathematics course, Modeling Our World I, intended to be taken concurrently with Algebra I, although not necessarily following the same scope and sequence, by ninth-graders needing support to succeed.

The course is designed to address the issue of students entering high school mathematics unprepared for a rigorous study of Algebra I. The materials focus on mathematical modeling as creative and productive problem solving and provide students opportunities to learn mathematics in a more investigative manner. Previous researchers (e.g., Doerr & Tripp, 1999) have studied how modeling approaches with secondary students can build algebraic thinking and related skills. Creating and using models in problem solving promotes reasoning and sense making, supports understanding and meaningful use of symbolic representations, and encourages validation of ideas. Some models can set the stage for proof while others are more useful in theorizing about real world phenomena.

Lessons for this course have been designed around the premise that learning algebra requires more than memorizing formulas and finding answers so they diverge from a more traditional approach to algebra of operating with unknowns and problem solving results in a solution to an equation. Through the use of technology students can access tools to explore mathematical models in tables, graphs, and equations and enable them to make sense of real-life situations and then create, revise, or adapt a mathematical way of thinking by using modeling for problem solving (Lesh & Zawojewski, 2007). In this way, students simultaneously gain an increased understanding of both the problem situation and their mathematization of the problem.
References:
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The Education Maximizers: Visualization, Gaming, Analytics
George Beckwith, Ed. D.
National University
September, 2014
Abstract

The Education Maximizers: Visualization, Gaming, Analytics

If we really want to maximize education and instruction—and at the same time, learning—the formula is straightforward. Visualize the content, game the content, and analyze both the instruction and the learning for continuous enhancement. Too often educators offer one of these instructional maximizers as the savior of education which news article after news article says is sub-standard in the USA. They seldom consider the possibilities and the effectiveness in integrating and using all three at the same time. This paper explores the research and cites examples supporting the use of these three maximizers to enhance instruction and leaning. It also speculates on how the integration and synergism of all three could be the tools for which educators have long been searching. Additionally, the paper includes a report on how the findings of recent brain research and assistive technology innovations can complement and support these maximizers. As just one example of the power of visualization, one need look no further than smart phones and tablets and how they are being used—primarily to interact with visual data to other people. Specifically, Facebook pictures, selfie photographs, GPS maps, YouTube Videos, Scene Captures, Action Videos, AND Games! Imagine the possibilities of placing educational and instructional content and programs in a visual format on a mobile device.

This paper will address how the three maximizers can address often asked questions about improving education and instruction. For example, how do we get students interested and engaged? By making it visual and game-like and building in some analytic measures. These measures will provide instant analysis and feedback on how well students are learning with immediate corrections and updates in the areas where learning is weak. Too high tech for your school district or business? Fine. Use a hybrid model or a blended approach with a part classroom and part online instruction. Focus on content that is visual and packaged in a game like program. This paper will show that a growing body of literature verifies that video and gaming applications have potential for enhancing mathematical instruction and learning for students with learning disabilities. It follows that such an approach would also be effective for students who have normal learning capabilities. Finally, it is anticipated that review of this paper will generate new information and reports of success, using these maximizers, not yet widely reported while further validating how powerful visualization, gaming, analytics can be enhancing teaching and learning.
Background

If you think about it, *visualization* has been around since the first prehistoric cave people painted the colorful bulls on the ceiling in the caves at Altamira, Spain. In a way, they were visualizing and recording with paint and skill on a cave ceiling the world around them. It could be said that the first movies were nothing more that visualization of stories and novels on celluloid. Similarly, Facebook and YouTube have turned our daily world into one in which we share visualization of ourselves, our friends, and the world around us with others. *Gaming* has taken visualization to another level via animation and graphical representations of anything and everything the human mind can imagine and mixes reality with fantasy so effectively that games take us to worlds far beyond anything we could have imagined just 20 years ago. If you travel a lot, and watch what people are doing on trains, planes, and buses, you'll find them playing Solitaire or MYST or some other game on their iPhones. By people, I don’t mean just adults and teenagers but children as young as 2 or 3 as well.

That *Visualization* and *Gaming* has a significant impact on our daily lives is obvious in that we are changing by learning how to do new and exciting things but the quality and quantity that learning has been and continues to be very difficult to assess and measure. It is fortunate for us, however, that there is a new and effective way to quantify and qualify what we are learning and it is called *Analytics*. Analytics makes data on the effectiveness of learning understandable to ordinary people and not just statisticians, and it does so by taking huge quantities of data and making it comprehensible by depicting it in highly visual charts, graphs, and videos thus, in a way, coming full circle back to visualization. Not only can we use analytics to make data collected on learning resulting from games and other multimedia techniques understandable to the public and politicians alike, but we can also use it to convince educational bureaucracies as well as teachers and professors that visualization and gaming techniques are learning and education maximizers worthy of their attention, use, and support.

A growing body of literature (Allsopp et al 2007) demonstrates that video visualization and gaming applications have potential for enhancing mathematical instruction and learning for students with learning difficulties. Those that question the cost of such technology approaches used in these approaches, which is usually a higher cost than normal education approaches, need only view the analytics that provide convincing evidence of the cost effectiveness vs. learning outcomes. Finally, the use of visualization, gaming, and analytics techniques in teaching and learning can promote greater independence for people with disabilities by enabling them to use such technology supporting approaches to assist in performing tasks that they were previously unable to accomplish without it, or had great difficulty accomplishing, by providing enhancements to or changed methods of interacting with the technology needed to accomplish such tasks.

In following pages, I will review the research that and related findings to each of these three education maximizers and then show how their integration can significantly enhance teaching and learning.
Visualization

The Harvard University Medical School Study (Harvard, 2014) did a controlled scientific study to determine if the human brain is impressionable and could be shaped and molded according to our thoughts. They called the experiment, in which they collected a group of adult volunteers to serve as the subjects, the “Creative Visualization Experiment.” A main criteria for the participants was that none of them could play the piano. They were divided into groups of three and all three groups were placed in separate rooms for a period of five days. The first group was placed in a room where they were given intensive piano lessons for the five day period. The second group was placed in a similar room for five days but in this room, the piano was not used by the participants but just served as room furniture. Finally, the third group was placed in an almost exact room for five days as were the other two groups but instead of learning to play the piano or ignoring it all-together, they were asked to just imagine they were actually playing it. They were charged to “visualize” playing and practicing it. They did not go near the piano but visualized using it.

Every effort was made to insure that, with the exception of how the participants spent their time, the rooms’ physical environment were exactly the same. Brain scans were made of the participants as they carried out the experiment. The results of the brain activity of the participants was shocking to many. As would be expected, the brain activity of the second group, who merely sat in the room and didn’t interact with the piano at all, showed no changes. Further, there was no shock in finding out that those who had actually practiced on the piano had structural changes in the area of the brain related to the movement of the fingers. What was shocking, however, was the finding that those who had only used creative visualization to imagine themselves practicing on the piano had almost identical structural changes in the brain as those who had actually had intensive practice on the piano. The Harvard Medical School (2014) experimenters that conducted the training concluded that the evidence from the experiment proved that imagination and creative visualization isn’t just an abstract theory but that imagining/visualizing can impact our brains physically thereby paraphrasing the well-known saying that “if you can imaging it… you can truly create it through the power of creative visualization.”

Time magazine (2007) noted that as children, much of our time is spent in imaginary worlds where we substitute toys and make-believe for the real world that we are just beginning to understand and explore. Given the findings of the Harvard study above (Harvard, 2014), those imaginary worlds were very likely recorded in our brains along with actual events. While we play, we also learn; and while we grow, our play becomes more complex as we add rules and goals resulting in something similar to games. Neurons are the core components of the brain and spinal cord. Learning occurs and memory is made when electrochemical impulses in the form of ions are collected in the dendrite spines of neurons in the brain (McDurmott, 2007).
Visualization has a historical context for changing the world. As a young student, Albert Einstein never did well with rote learning. His success came not from the brute strength of his mental processing but from his imagination and creativity. He could \textit{visualize} how equations would manifest themselves to a boy riding alongside a light beam or an enclosed elevator accelerating up through space (Isaacson, 2007). \textit{Visualization}—Isaac Newton (an apple falling from a tree) and Einstein (a boy riding a light beam)—should become a key method of presenting ideas and concepts to our students.

VizThink is a global community for visual thinkers and communicators who like to get beyond words and believe that visuals can be an effective tool whether you're just trying to work through your ideas or working to get your message across as simply as possible. They just completed doing research on \textit{Visualization in Learning} and the resultant research report is insightful. This report was developed in conjunction with the people at Brandon-Hall Research, Brandon Hall Group is a preeminent research and analyst firm, with more than 10,000 clients globally and more than 20 years of delivering \textit{Research-Based Solutions™} that Empower \textit{Excellence in Organizations™}. In the report, produced with our co-writer Tom Werner, they discuss 14 visually-loaded case studies on how visualization can improve the various stages of the learning development life cycle. They didn’t know what they would find when they began the project, but as the submissions came in, a clear conclusion started to emerge: \textit{Learning designers are using visual thinking techniques throughout the learning development life cycle}. Not only were people using visual thinking to improve the final output of a learning module, they were using visuals to improve brainstorming, discovery, organization, planning, and design.

\textbf{Visualization Impact on STEM}

The ability to mentally manipulate shapes and understand how the three dimensional world works has shown to be a strong predictor of achievements in scholarly papers and patents by individuals three decades later (VisThink, 2013). Research (VisThink, 2013) shows that high scores on tests of spatial ability taken at age 13 are predictors that those students will develop new knowledge and produce innovations in science, technology, engineering and mathematics—collectively known as STEM. For educational purposes, it is most noteworthy that spatial intelligence skills can be improved with education and training so overtime, students’ spatial intelligence can be increased. More specifically, a study published recently in the Journal of Cognition and Development (Gaming and Education, 2014), indicates that training children in Spatial Reasoning can improve their math. A single twenty-minute training session in spatial skills enhanced participants ability to solve math problems thus suggesting that the training “primes” the brain to tackle arithmetic according to the study’s author, Kelly Mix, a Michigan State University education professor (Gaming and Education, 2014).

\textbf{Gaming}
There can be no better utilization of visualization for learning than gaming—particularly “educational” and/or “serious” games.” Visualization in thinking is also sometimes referred to as “Spatial Intelligence” (Constructivism, 2014) originally identified by Dr. Howard Garner of Harvard University as one of the “multiple intelligences.” Spatial Intelligence is best challenged and enhanced by engaging in content and problem-solving in a game format. In mastering a game, spatial intelligence skills are essential for success in that it lets you visualize what may happen next if you make a particular move. Gaming is strongly supported by “constructivism”, another theory of learning in which students learn effectively by doing since educational and serious games have the potential and flexibility of being customized to match the abilities of individual students which engaging them in interactive tasks that simulate real-life situations (Constructivism, 2014). Though research on both the cognitive and behavioral impacts of games that are violent have shown mixed outcomes, some nonviolent games’ impact have been positive. Remarkably, certain nonviolent educational games have shown they can improve brain functions while others have indicated their potential for reversing cognitive loss associated with aging. A strong characteristic of such educational or “serious” games is that they can be developed and/or modified to flexible to the learner’s needs from content that is simple to content that is sophisticated. Further, research postulates that serious games utilize the popularity and form of electronic entertainment to teach everything from the three Rs to public policy issues and show promise for rescuing the humanities via its focus on storytelling. Students are already learning a language and exploring world history while developing skills in reading, math, logic, and collaboration (Constructivism, 2014).

A June 2013 article by The Yale University School of Medicine researchers (Constructivism, 2014) detected a new approach of how technology and gaming is changing and beginning to offer a promising tool for educating people and changing behavior. They note that whereas the first interactive educational games provided a narrative interrupted periodically with tedious, poorly constructed tasks organized like homework, current trends are to integrate learning and fun. Squire (2013) found that interactive digital media in the form of video games offer immersive experiences in which players solve problems and learn more than just facts becoming different people by seeing and understanding problems in a new way. He concluded that such games challenge us to rethink the role of information, tools, and aesthetics in a digital age. Giannetto, Chao, and Fontana (2013) designed and implemented a three-part system for gamifying a social learning environment designed for utilization in higher education classrooms that traditionally relied upon lecture.

Gamification, in their experience, has recently gained traction as an effective way of engaging learners in content and contexts that would normally be otherwise undesirable or tedious. Students thus engaged are actively learning and show improved grades or better comprehension resulting in a greater impact on their success in learning the material and content. Finally, Guillen-Nieto (2012) identified, in research on multicultural knowledge taught in a serious educational game, the key factors that make serious games effective. Effectiveness stems from the correct balance of the different dimensions involved in the creation of serious games, specifically instructional content, game dimensions, game cycle, debriefing, perceived educational value, transfer of learned skills, and intrinsic motivation. There is currently no
“handbook” regarding what this correct balance should be but just identifying the factors is a big step forward which will hopefully lead to such a handbook soon!

Gaming for Students with Disabilities

Educational games’ exercises and activities can provide opportunities for the Behavior Disorders and Emotional Disturbance BD/SD student to promote positive socialization using activities such as computer games that allow group interaction and success. Such games should involve friendly, fun-filled, and rewarding challenges that promote good feeling by allowing recurring success and positive reinforcement. Such exercises and activities will provide the BD/ED student with a sense of worth, positive interaction with others, and non-threatening familiarity with the instructional environment—all of which can provide a calming effect on the student and allow them to be productive members of a class (Yanoff, 2007).

Games can also help Students with Attention-Deficit/Hyperactivity Disorder (AD/HD) who can be highly imaginative and creative but have a great need to experience success (Yanoff, 2007). Instruction design that incorporates many visual components will engage their great imaginations and creativity which when engaged provide a focus and productivity that promote their success in learning instructional materials. Computer activities and video exercises that are interactive and highly visual help such students focus and allow them to move around. Design in automated positive feedback (audio complements, video fireworks, etc.) that lets the student know they have succeeded in the task. Include in the design some exercises and activities for the primary purpose of providing exercise and socialization rather than a strictly academic purpose.

Students with Autism

A characteristic of Autistic children is that by age 3, the child’s ability to speak and interact socially is significantly impaired (Winebrenner, 2006). Autistic children need supports, such as visual teaching tools which might include video games and video programs, that communicate the instructional material to the student visually while encouraging social interaction with others. Yanoff (2007) supports including video activities in the instructional and specifically recommends video tapes with closed captioning to help teach reading. The design should also include instructional activities to enhance socialization such as having students watch videos and movies after which the group would discuss what the people in the movie were saying and feeling. Since video gaming is a well-known motivator for those who play the game and education is in vital need of a learning approach that motivates its students, the gaming industry and the educational establishment should form a partnership to develop educational games that motivate students to learn something of value to society. For example, the Remission Video Game is used to help young cancer patients understand their illness. The research shows playing the game makes them healthier. Patients become more motivated to take care of themselves.

Analytics

Though the use of “Analytics” in higher education is a relatively new area of practice and research, it has always been inherently with us if we consider that analyzing data is a key component of research and the a cost-benefit analysis of doing a given study is one of the first
determinants of whether or not a study will be funded. What has changed is that “visualization” has allowed us to see huge and boring quantities of data in a summary fashion that is comprehensible to the average person as well as critical decision makers. 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.

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. 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). 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.

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. if Ed., 2009). 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. 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.

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.

Conclusions

This paper addressed how the three maximizers of visualization, gaming, and analytics can address often asked questions about improving education and instruction. It explained and provided evidence that students who become interested and engaged via the use of visualization of content in learning approaches—to include gaming—learn better and retain what they learned longer. It reviewed how analytic approaches can provide instant analysis and feedback on how well students are learning with immediate corrections and updates in the areas where learning is weak. In cases where start up with high tech approaches may be too costly for your school district or business, it was suggested that a hybrid model or a blended approach with a part classroom and part online instruction could be used while keeping the focus on content that is visual and packaged in a game like program. The paper reviewed information from a growing body of literature that verifies that video and gaming applications have potential for enhancing mathematical instruction and learning for students with learning disabilities. It follows that such an approach would also be effective for students who have normal learning capabilities. Finally,
it is anticipated and hoped that the information in this paper will generate discussion of these maximizers promote further research to validate how powerful visualization, gaming, analytics can be enhancing teaching and learning.

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Gains in Environmental Science and Vampire Power Knowledge Among Middle School Students Participating in STEM Project Activities

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Abstract

During the 2013-14 school year, one hundred ninety-five (195) students enrolled in middle school classrooms (grades 5-8) in the states of Louisiana, Texas, and Vermont completed standby power energy monitoring of home appliances under the guidance of their teachers. Eight hundred students in six US states served as comparison sites. Matched pre-post data extracted from treatment student test scores confirmed large gains in knowledge of environmental science and vampire power (p < .01, effect size = .86). Post test only content knowledge scores of students at the comparison sites were more similar to the pretest knowledge level of treatment students and confirmed the treatment gains likely resulted from the out of school time (OST) activities coordinated in school time (IST) by their teachers. Findings result from year one of a four-year scale up project supported the U.S. National Science Foundation Innovative Technology Experiences for Students and Teachers (ITEST) Grant.

Acknowledgement

This research was supported in part by the U.S. National Science Foundation Innovative Technology Experiences for Students and Teachers (ITEST) Grant #1312168, by the Hawaii State Department of Education, and by the Manoa Innovation Center, Research Corporation of the University of Hawaii.
Use of Padlet to Explore Non-traditional Ways of Teaching and Learning in an Online Masters in Instructional Design and Technology (MS-IDT) Program

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ABSTRACT
Western heritage has defined learning as taking place in the mind, with a focus on thinking and cognition. A more current view is informed by the globalization of society; this view, or stance, is the understanding that learning is not just situated in the mind but includes body and spirit. A more global perspective includes a somatic or embodied learning; rather than the cognitive way of teaching and learning in which the mind subjugates the body, instead, the body and mind “learn” together. Learning is an experience that is immediate, physical, and emotional, such as the passion that drives investigation and discovery. The arts are deeply rooted in this type of learning (Merriam, Caffarella, & Baumgartner, 2007; O’Donoghue, 2011).

This research loosely followed the qualitative methods of visual research suggested by Pauwels (2011), specifically the methodology of “researcher-initiated production of visual data and meanings” described by Wagner (2011) “that encourages subjects to disclose their perceptions, sentiments, and ideas. In some versions of this method, researchers invite (or
instruct) subjects to make drawings, photographs, or videotape recordings that reveal how they think or feel about matters” (p. 13).

Students in the Masters in Instructional Design and Technology (MS-IDT) at CSU Fullerton are reflective of a global society, with multiple languages, cultures and perspectives in a cohort of approximately 25 students. The student diversity offers the basis for a rich discussion and exploration of differences in experiences and perspectives with teaching and learning. In practice, however, it is not always easy for students rooted in traditional, Western perspectives to accept non-traditional views of teaching and learning as relevant to the profession of instructional design. Online instructional designers who develop curriculum for multi-cultural contexts need to develop competencies in these areas (Sargent, Gautreau, & Stang, 2014) and thus, must learn about non-traditional forms of teaching and learning and their importance application to instructional design in a global context.

The lead presenter is the instructor of the Adult Learning Theory course in the Master of Science in Instructional Design and Technology at CSU, Fullerton. I noticed that as students began to read and discuss the section of the text (Learning in Adulthood by Merriam, Caffarella, & Baumgartner), that dealt with non-traditional ways of learning (Chapter 8 Embodied Spiritual and Narrative Learning, Chapter 9 Non-Western Perspectives, and Chapter 10 Critical Theory, Postmodern, and Feminist Perspectives), some students struggled with these unfamiliar ways of thinking about teaching and learning, and did not consider them relevant to their current or future role as online instructional designers. Students had been engaging in text-based discussions, and watching visual and textual presentations by peers on learning theories as presented in their course readings. These students were very adept at written reflections on the discussion board, with long and complex textual analyses. However, the lead author wanted to move them away from this “thinking and cognition” based analysis to something more somatic, based in the arts.

Padlet (available for free at padlet.com) is a website that allows anyone to create a virtual “bulletin board” where users can post images and text. Padlet was used to create an assignment: students were required to choose a picture from any source that reflects their understanding of the ideas presented in the readings and in the lecture. Then students went to the Padlet assignment and posted their picture with an explanation of “why this picture spoke to you and what it symbolizes for you in terms of non-Western teaching and learning.” The result was a meaningful collage that illustrated numerous forms of knowing and understanding. The interaction between the text and pictures illustrated both individuality and a collective social understanding. Most students pinned several pictures and explanations to the Padlet bulletin board. Analysis of the results was purposely open to multiple interpretations because, as O’Donoghue (2011) suggests, the layers of meaning inherent in an image depends on “who is doing the looking” (p. 8). Thus, the visuals and text alone do not tell the entire story. This activity was supplemented with student-created presentations on the chapter topics, two on Spiritual Learning, and two on Non-Western Perspectives on Learning and Knowing, followed by Discussion Forums in which they were to respond to the presenters and discuss the content. Student’s comments added insight into the perspectives of the person’s visual posting.
Analysis of Student Products
Coupled together, it seemed that all students, no matter what their culture of origin, were deeply challenged by the idea of including spirituality into teaching and learning. One student wrote that the entire topic was “uncomfortable” and another wrote that spirituality is an “immensely and intensely private affair and is totally inappropriate in a classroom or in anything but a personal setting. Who is to say that a teacher is more qualified to provide guidance on this topic with a student rather than the other way around?” This student chose to post a picture that was relatively neutral in feeling and commentary:

The student who felt spirituality was an “uncomfortable” topic posted a picture that emphasized family and familial bonds, which was an expression of non-school learning, which as her interpretation of “Non-western ways of knowing and learning”:

Others related the idea of spirituality in teaching and learning to the workplace, focusing on how the mind and body are one. A European student wrote, “What I would be interested in is would you think that workplaces that place an emphasis on a healthy work/life balance could be considered workplaces where the health of the spirit is also fostered? I'm asking since a well-rested employee is more likely to arrive at work "in better spirit".” This student posted a picture directly related to this idea (right):
Another student posted a picture that illustrated an understanding that learning about non-Western ways of knowing and spiritual learning was important and in a way, freeing (below).

This picture reminds me of breaking out of the mold of how we currently think and start looking at non-Western perspectives. It really applies to many areas of learning, breaking free from what we know and are bound by and opening up our horizons.

Several students posted pictures about the mind-body connection, especially how it relates to physical activity, and in many ways, the spiritual aspects of physical immersion into an activity (right and below):

For me, surfing is spiritual. It is western and non-western. It is how I connect to something greater than myself.

I chose this picture because it resonates the idea of embodied learning. The body, mind, and spirit connect and allow for experiences and learning on a number of levels to take place. This cultural dance reflects the history, tradition, and power behind the experience.
The interpretation of non-Western Ways of Knowing displayed multiple perspectives. One, from a Chinese student, gave others a deep understanding from her own experience and a perspective not available in many classrooms in the U.S.:

“I hear and I forget, I see and I remember, I do and I understand” is my learning philosophy since I was a little child. Chinese believe in Confucius. However, the Cultural Revolution almost destroyed Confucius’ culture, and fostered a less-educated and mis-educated generation of transmitters and receivers – teachers forced to lecture by reading straight from books, and students listening without seeing too much, without remembering much at all, and not realizing they do not understand. Fortunately enough, the Cultural Revolution was ended before that generation got too old to learn. Some of them, like me, those who did not graduate before the end of the Cultural Revolution, still had chances to learn formally. I have seen it work on myself, I hear, I see, and I do, so I know I understand, and I can use my knowledge in my career.

Particularly poignant was the perspective of two students who pointed out the power differential within and across societies. Both students were from historically marginalized populations, persons with disabilities and the non-Caucasian, non-dominant culture:

To me this image represents empowerment. Individuals who may be otherwise ignored working together to make the world take notice. The actions of these group serve as a challenge to the established power structure.
Two students chose trees to depict their understandings, from different perspectives:

Like Sistema, I also chose a tree but I chose this specific image because of the intertwining branches. To me this is representative of learning as a holistic and integrated experience.

I chose this picture because to me, a tree is a compelling expression of embodied knowing. Without consciousness or cognition, each cell in the tree knows what to do and how to interact with its world.

Finally, two students posted very long narratives with their pictures. These narratives seemed to display opposite perspectives; one, a very Western, cognitive-based way of knowing, illustrating a cognitive dissonance with the ideas presented, a struggle to integrate these new understandings with the old:

By learning about the different ways that cultures view effective learning I am beginning to see more holistic view. Similar to ID belief that appealing to multiple senses increases learning transfer, I think that maybe learning through cognitive, experience and history combined may also increase transfer. Here is a simple example; reading a text passage about the pain of a needle prick, while experiencing a needle prick, immediately followed by an elder's story of a painful needle prick would increase learning transfer over any part on it's own. In summary, combining cultural learning perspectives may increase learning transfer.

and the other illustrating a deep understanding and experience with these topics. His advice to Instructional Designers underscores the intention of this activity:

I've long been a fan of Yinka Shonibare's art, and this gives me an opportunity to share a compelling image his work. He explores ideas of cultural hegemony and the vestiges of colonialism. Not only the commodifying spirit of the "western" perspective (or as Walter Benjamin described it, as like "the dint of a secret heliotropism") but also the construction of the non-western "other". The headless mannequins are wearing bespoke victorian era gowns made out of fabric that while superficially connect to African culture are part of a global supply chain of Dutch designed cotton fabrics often produced in Asian countries and then subsequently sold as being "African". If we are to design instructional programs that effectively connect with our intended audience, we must appreciate how those learners construct identity.


Being Known: The Relationship between Student Perception of Teacher Treatment and Student Achievement

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Abstract

The purpose of this study was to examine similarities and differences between student perceptions of being known by the teacher and academic achievement as measured by students’ course grades. The study sample included 177 students from a Pacific Northwest suburban high school. The Being Known Survey, developed by Lenz and Adams (2000), was used to assess overall student perceptions of being known by teachers. Items were grouped into four basic subscales to assess student perception of (a) teacher interest and ability to adjust teaching, (b) feeling safe and ability to communicate feelings, (c) self and teacher expectations, and (d) teacher treatment and interaction. Total survey and subscale scores were compared across personal and academic variable groups. Overall, students indicated moderate levels of being known by the teacher. Students with final course grades of A’s and B’s and those with D’s and F’s indicated higher levels of being known than the C students. Academically, students perceived their teachers kept them informed of their progress and grades. In conclusion, this study provided support for the importance of understanding the relationship between the students’ educational environment and the role student perceptions of being known play in their academic success.
One of the most pressing problems in education today is the sense that students feel isolated in school settings, especially in large comprehensive high schools. How secondary educators should address this complex problem is the basis for this article. Using the Being Known Survey, an instrument developed by Lenz and Adams (2000), we investigated how a sample of high school students perceived their sense of being known by their classroom teachers.

**Review of the Literature**

While there is extensive literature on the relationship between various classroom environmental and educational factors on students’ grade point average and success in school, scant research has focused on the relationship between students’ perceptions of being known by the teacher and academic success. This literature review investigates the relationship between students’ perceptions of being known by their teachers and students’ academic achievement as measured by student course grades.

Whitlock (2006) found that “school connectedness is linked to perceived developmental support in the school context independent of demographic and contextual control variables” (p. 25).

Two studies of student perceptions of academic success and teacher expectations conducted by Brophy (1983) and McEvoy and Welker (2000) reported that student achievement levels were directly influenced by students’ perceptions of teacher expectations about their performance and capabilities. They also suggested that a primary requirement for facilitating student academic and social success is creating environments in which students feel safe and valued. Both teacher expectations and students’ feelings of safety and being valued are aspects of students’ perceptions of being known by their teachers. Wang, Haertel, and Walberg (1990) noted that students’ perceptions of teacher attitudes, expectations, and interactions as well as
time spent engaged in academic tasks may contribute to social and academic success as much as effective instruction.

**Student Perceptions of the Social Environment**

Moos (1978) and Hearn and Moos (1978) studied the relationship among classroom climate, student learning and achievement, and levels of student satisfaction. Based on investigating 200 classrooms of varying populations and content areas, Moos found that students were most satisfied with classroom types that emphasized teacher-student relationships and student-student relationships as well as student participation and interaction. Students were least satisfied with classrooms that deemphasized relationship and participation. Additionally, neither students nor teachers were satisfied with classrooms that emphasized teacher control.

**Classroom Environment and Content, Learning, and Management**

Walberg (1969) explored the influence of the social environment on classroom learning. Using scores from student ratings relative to the learning environment, Walberg identified different types of environments then correlated them to science skills, interest in academics, student activity, and intelligence. Walberg concluded that to encourage high rates of achievement and understanding, the social environment must be intellectually challenging, without inhibiting emotional and behavioral learning, and be satisfying and socially connected. Additionally, Schussler (2009) argued that “only through knowing can teachers provide the appropriate type and amount of academic support” (p. 117). These findings provide support for addressing the issue of student perceptions of being known by the teacher and its relationship to student-teacher interactions in the classroom.

Hearn and Moos (1978) conducted a study investigating classroom climate in terms of the relationship between content areas and environment. They concluded that teachers who limit
student-teacher interaction (a) failed to provide encouragement for student involvement in learning, (b) engaged in frequent teacher-student arguments, (c) received low teacher ratings, and (d) had decreased student involvement in the academic process.

Classroom management strategies are used by teachers to maintain order during instruction and can influence the quality of student-teacher interactions and relationships (e.g., how well the student feels he or she is known and how the student’s academic achievement is influenced). Traynor (2002) identified and evaluated classroom management strategies that permitted academic learning skills to increase and preserved students’ well-being. Strategies Traynor found to be conducive to learning included (a) reasonable rules in a positive, firm, and safe environment; (b) engaging instruction, and (c) rewards for self-monitoring.

**Student Achievement and School Characteristics**

McEvoy and Welker (2000) reported that socioeconomic factors have less influence on academic achievement than classroom environment. Instead, successful schools often have personalized classrooms that foster students’ sense of belonging as well as skill mastery and learning. Similar findings have been reported by others (Brophy, 1996; Cotton, 1996a; Cotton, 1996b; McPartland, Jordan, Letgers, & Balfanz, 1997).

Outcomes of a research study funded by the Gates Foundation (2005) included characteristics such as using research-based curricula, having common goals, implementing mastery learning, and fostering an environment that promotes mutual respect, responsibility, and academic study. Additionally, Reynolds et al. (1996) identified five contributors to student achievement and effective schools: (a) emphasis on teaching basic skills, (b) high expectations for student achievement, (c) frequent evaluation of student progress, (d) safe and orderly school climate, and (e) educational leadership.
An important characteristic of being known is a student’s perceived sense of closeness with the teacher. While several studies have studied aspects of the environment-achievement connection or association (Walberg, 1969; Hearn & Moos, 1978; Moos, 1978; Murdock & Miller, 2003), less is known about the relationship between students’ perceptions of being known and their academic achievement.

Factors Influencing Being Known in the Classroom

Academic achievement and teacher treatment. Several studies have examined the relationship between the psychosocial environment of the classroom and student motivation and academic achievement (Ames, 1992; Eccles & Midgley, 1989; Maehr & Midgley, 1991; Midgley, 1993). These studies used both attribution and goal theory as a foundation for investigating (a) students’ perceptions of their educational experiences, (b) how these perceptions influence their motivation, and (c) how teachers communicate their expectations for individual students. Anderman and Midgley (1998) found that students’ perceptions of themselves and their educational experiences influenced their motivation, as well as how teachers communicate their expectations for individual students. Concerning student motivation, Anderman and Midgley found that students’ perceptions of themselves and their educational experiences influenced their motivation more than the objective reality of those experiences. If students attributed their poor performance to factors outside of their control, they tended not to persist in improving that performance. In contrast, if they attributed their performance to controllable factors (e.g., lack of skill or poor study habits), they were more likely to persist in improving their performance.

In a study investigating how teachers communicate expectations to students about their academic achievement, Graham (1990) noted that student-teacher interactions can influence
student attributions about their academic performance and concluded that teachers can knowingly—and unknowingly—communicate their expectations through instructional practices. In a study focusing on productive factors in learning, Walberg (1984) identified student perceptions of the social environment within the classroom as one of the most important contributors to academic learning and achievement. Thus, student-teacher interaction and student perception of being known by the teacher may contribute to the classroom learning environment.

Babad (1996) noted that “students react to the classroom reality as it is perceived and subjectively interpreted by them—their perceptions of the classroom environment are critical” (p. 2). Babad also studied the perceived differential behavior of teachers in relation to classroom perceptions of students with differing academic achievement levels. Results indicated that high achievers perceived being highly favored by their teachers who had rigorous academic demands. Lower academic achievers, although not as strongly, also perceived that their teachers favored higher-achieving students. While Babad’s study focused on students’ perceptions of the differential treatment by the teacher related to academic achievement status, it did not examine students’ perceptions of being known by the teacher in terms of the teacher’s attempt to develop a personal connection.

Teacher treatment is critical to shaping the social and psychological environment of the classroom. Students’ perceptions of the classroom environment affect how they interpret teacher treatment, especially for the lowest-achieving students (Midgley, Feldlaufer, & Eccles, 1989). Students have been adept at detecting both behavioral and attitudinal cues of the teachers’ expectations. Those students who perceive their teachers to be caring, supportive, and fair typically have positive attitudes toward school and increased motivation to achieve (Babad,
Quality of student-teacher interaction. While student-teacher interactions are important to student academic success, the quality of those interactions (e.g., being known by teachers) can also influence students’ attitudes about school. In a study examining the attitudinal perceptions of successful post-secondary students, Eichinger (1997) surveyed 201 college students about the interactions with their high school science teachers. Eichinger found that the quality of student-teacher interactions exerted the greatest influence on student attitudes toward science. Students who perceived their science teachers as having a good rapport; open communication with students; and being supportive, caring, and approachable felt more motivated to learn in these classrooms. Given that this study examined the perceptions of academically successful students, these results have relevance to our study examining the relationship among students’ perceptions of their student-teacher interactions, the extent to which students feel known by their teachers, and their academic achievement. Limitations of this study, however, include (a) the content matter, (b) the delay of student-teacher interactions, and (c) when the survey was administered.

Academic achievement and student perceptions of self and teacher expectations. The expectations students have about themselves and their teachers can influence their academic performance (Berndt & Miller, 1990; Brophy & Good, 1974; Eccles et al., 1983; Juvonen & Murdock, 1995). Important perceptions are related to how students perceive they belong or their sense of connectedness to school (Blum & Rinehart, 2001; Bonny, Klostermann, Hornung, & Slap, 2000; Bowen, Bowen, & Richman, 2000; Catalano, Haggerty, Oesterle, Fleming, & Harkins, 2004; Klen & Connell, 2004; Libbey, 2004; Rosenfeld, Richman, & Bowen, 2000; Whitlock, 2006).
**Ethnicity and teacher expectations for student achievement.** In terms of student perceptions of being known by the teacher and subsequent academic gains, the relationship between ethnicity and student perceptions of self and teacher expectations can influence student academic achievement levels. In *Pygmalion in the Classroom*, Rosenthal and Jacobsen (1968) suggested a strong relationship between teacher expectations and differential treatment of students, and students’ self-fulfilling prophecies about behavior, academic achievement, and self-concept.

Rubovits and Maehr (1973) found that teachers of Euro-American ethnicity had lower expectations of students from other ethnic groups regardless of academic aptitude. Johnson, Crosnoe, and Elder (2001) concluded that “race and ethnicity, at both the individual and school levels, influence the educational experiences of American middle school and high school students” (p. 334). Crosnoe, Johnson, and Elder (2004) reported that “across all groups, students who had more positive views of their teachers did better and had fewer problems in school, while those with more negative views did worse and had greater problems” (p. 73). They did not, however, report to what extent ethnicity figures in students’ perception of being known by the teacher and how these perceptions relate to students’ academic achievement. Sheets (1996) compared student-teacher perceptions of discipline and how student ethnicity, achievement, and gender influence teacher practices. Many students reported a perceived lack of respect, differences in communication styles, and teachers not caring for or about them. This led to avoidance by students not attending or engaging during class and, consequently, teachers removing students whom they felt were a discipline problem. While not explicitly stated, the results of the Sheets study lend support to the importance of student-teacher relationships and students’ perception of how well they are known by the teacher.
Student perception of safety and ability to communicate feelings. Students’ perceptions of being known by their teachers and subsequent academic achievement can also be influenced by students’ perceived sense of safety in the school environment and the ability to communicate these feelings to teachers. Based on their analysis of the 2000 School Survey on Crime and Safety conducted jointly by the Bureau of Justice Statistics and the National Center for Education Statistics (NCES), DeVoe et al. (2002) reported that between 1992 and 2000 there were 700,000 violent crimes and 1.2 million theft crimes among students aged 12 through 18. Students who feel known by their teachers may be more likely to share with them concerns, issues, and actual incidents of conflict or violence they experienced. Consequently, school safety becomes connected to the affective welfare of students and students’ perceptions of being known by their teachers. Dwyer, Osher, and Warger (1998) and Dwyer and Osher (2000) found that students feel safe when they are able to communicate feelings (e.g., needs, fear, and anxieties) to school staff, thus emphasizing the importance of positive relationships between teachers and students.

Teacher shows interest in student learning/adjusts teaching to meet students’ needs. Murdock and Miller (2003) reported that students’ perceptions of teachers caring about them were more important than the students’ perceptions of their own effectiveness or how their teachers rated their efforts. Colvin, Flannery, Sugai, and Monegan (2009) used an observation system to provide information on teachers’ instructional practices and their effect on whole-class behavior. Results indicated that by changing their academic instructional practices to incorporate increased interaction with students, high school teachers can increase student engagement even without an increase in teacher social reinforcement.
Purpose of Study

Teachers play a vital role in the academic success of students. The student-teacher relationship is critically important not only for students’ academic success, but also for their sense of well-being, self-efficacy, and perceptions of acceptance and value. In fact, how teachers treat their students can contribute to students’ sense of being known, ultimately affecting students’ tendencies to persevere in school or leave. Related to teacher treatment and academic success is the ability of schools to retain students until they graduate.

The first purpose of this study was to examine group similarities and differences in terms of students’ perceptions of being known by the teacher, within the classroom and school environment, and academic achievement as measured by the students’ final course grade. The second purpose was to determine, using the entire sample, if there was a relationship between student perceptions of being known by the teacher and academic achievement.

The Being Known Survey assesses a student’s perception of being known across several classroom, interaction, and school climate characteristics which include but are not limited to the following: (a) high teacher expectations; (b) awareness by the teacher of the student’s plans and goals; (c) teacher knowledge of the student’s strengths, challenges, and problems; (d) willingness of the teacher to modify teaching in response to student learning needs; (e) teacher showing respect for student differences and student feelings; (f) teacher approachability and demonstration of interest in the student’s academic and non-academic interests, concerns, or problems; and (g) the student’s perception of his/her academic progress and the teacher’s grading system.
Method

The Being Known Survey (BKS) (Lenz & Adams, 2000) was designed to provide a global measure of a student’s perception of being known by the teacher. For this study, we grouped the items in the BKS into four subscales: (a) teacher treatment and interaction, (b) self and teacher expectations, (c) feeling safe and ability to communicate feelings, and (d) teacher interest and ability to adjust teaching. We measured student perceptions of being known by administering the survey to students from grades 9 and 11 across seven classrooms taught by three different teachers in a Pacific Northwest high school.

BKS Development and Item Creation

Items on the BKS are presented in single-response, Likert-type, and open-ended formats. Items were developed based on their ability to assess each of the factors or variables identified briefly, concisely, and with as little confusion in response alternatives available to the respondent as possible. Items were written below a fourth-grade reading level because the survey was administered to students of varying reading abilities in grades 9 and 11. The number of items included in the survey was sufficient to adequately represent and distinguish each of the factors or variables investigated, taking care to avoid collecting redundant data. We attempted to eliminate bias in the items and use a format that allowed the same data-collection technique with every respondent (Babbie, 1995).

Conceptual definitions of the variables were used for scale development. Initial development of the BKS involved selecting a pool of items for each of the four subscales and modifying or creating additional items as needed. Items considered too narrow in focus or too ambiguous were eliminated from the initial pool (Adams, 2003, personal communication).
**Demographic Items**

Previous classroom-climate research has noted relationships between academic achievement and various student demographics such as age and ethnicity. We used eight demographic prompts from the BKS to assess the relationship between personal and academic student factors and student achievement. Demographic prompts 1, 2, 4, 5, and 6 included personal demographic questions regarding (a) sex, (b) age, (c) race, (d) free or reduced-price lunch eligibility, and (e) whether the student currently or previously was in out-of-home care. Demographic prompts 3, 7, and 8 included questions concerning academics: (a) current grade level, (b) name of the teacher for the class period in which the student completed the survey, and (c) the class period in which the survey was completed.

**Multi-Item Scale Development**

Specifically for this study, we grouped survey items (excluding the first eight used for demographic data collection) to create four multi-item subscales: (a) the Teacher Treatment/Interaction (TTI) scale, (b) the Self-Teacher Expectation (STE) scale, (c) the Safety/Communicate Feelings (SCF) scale, and (d) the Teacher Interest/Adjustment (TIA) scale. Cronbach alpha reliability coefficients were computed for all BKS subscales.

The number of items in the subscale and individual subscale items are referenced using a set of abbreviations and number. For example, TTI6 stands for the full 6-item Teacher Treatment/Interaction subscale. TTI6-1 refers to the first item in the TTI6 scale, and TTI6-2 refers to the second item.

The Teacher Treatment/Interaction (TTI6) subscale includes BKS items 1, 3, 6, 7, 9, and 14. Items 1, 3, 6, 7, and 9 were used to measure the level of perceived teacher treatment and interaction using a 7-point Likert-type set of anchors from 1 = *Very Dissatisfied* to 7 = *Very*
Satisfied. Item 14 was measured using a 7-point Likert-type set of anchors from 1 = Very Unlikely to 7 = Very Likely. Examples of items from the TTI6 include “How satisfied are you with the ways this teacher answers your questions?” and “How likely is it that this teacher understands the struggles and success that you face in your life?” Scores from the six items of the subscale were summed and then divided by the number of items in the subscale to derive an average subscale score for perceptions of teacher treatment and student-teacher interaction.

The Self/Teacher Expectation (STE5) subscale includes BKS items 8, 12, 20, and 23. Items 8 and 20 were used to assess the level of students’ perception of self and perceptions of teacher expectations using a 7-point Likert-type set of anchors from 1 = Very Dissatisfied to 7 = Very Satisfied. An example of an item from the STE5 is “How satisfied are you with the teacher’s grading system for this class?” Item 12 was measured using a 7-point Likert-type set of anchors from 1 = Very Unlikely to 7 = Very Likely. Item 23 asks respondents to indicate which grade, on a scale from A to F, they expected to get in the class in which they completed the survey. Scores from the four items of this subscale were summed and then divided by the number of items in the scale to derive an average subscale score for student perceptions of self and perception about teacher expectations for them.

The Safety/Communicate Feelings (SCF7) subscale includes BKS items 10, 11, 15, 16, 17, 18, and 21. Items 10, 11, 15, 16, 17, and 18 were used to assess perceptions of safety and perceptions of the ability to communicate feelings with the teacher using a 7-point Likert-type set of anchors from 1 = Very Unlikely to 7 = Very Likely. An example of an item on this subscale is “How likely is it that you would let this teacher know if you were really angry at others and did not know what to do?” Item 21 asks respondents, using a 7-point Likert-type set of anchors from 1 = Never to 7 = Daily, to indicate how often they let their teacher know of a problem about
which they were concerned. Scores from the seven items of this subscale were summed and then divided by the number of items in the subscale to derive an average subscale score for students’ perceptions of feeling safe and being able to communicate their feelings to the teacher.

The Teacher Interest/Adjustment (TIA6) subscale includes BKS items 2, 4, 5, 13, 19, and 22. The six items were used to measure student perceptions of teacher interest and ability to adjust teaching strategies to meet the learning needs of the student. Items 2, 4, and 5 were measured using a 7-point Likert-type set of anchors from 1 = Very Dissatisfied to 7 = Very Satisfied. An example of this type of item is “How satisfied are you with the opportunities that this teacher gives you to explain academic problems or concerns?” Items 13 and 19 were measured using a 7-point Likert-type set of anchors from 1 = Very Unlikely to 7 = Very Likely. An example of this type of item is “How likely is it that this teacher knows your strengths and challenges?” Item 21 asked students to indicate, using a 7-point Likert-type set of anchors from 1 = Daily to 7 = Never, to indicate how often the teacher asks for ideas about how to improve his or her teaching. Scores from the six items in this subscale were summed and then divided by the number of items in the subscale to derive an average subscale score for students’ perceptions of teacher interest and ability to adjust teaching strategies.

Data Collection

Sample Population

We used an existing data set consisting of 177 student participants collected by Lenz and Adams during the 2001-2002 academic year. A non-probability purposive sampling method was used to select teachers and students to participate in the study. No attempt was made to randomize the sample with regard to demographic variables addressed on the survey such as geographical location of the school, sex of the teachers or students, or grade level. Students and
teachers from a public high school located in a suburban area of large city in the Pacific Northwest of the United States served as the study population. At the time of the survey, the total school enrollment was 1,529 students with 34.3% of students eligible from free or reduced-price lunches. The ethnicity breakdown of students was 2% American Native, 8.2% African American, 12.4% Asian, 16% Hispanic, and 61.4% Caucasian.

The total number of surveys completed was 192. However, 15 student surveys were dropped because of incomplete responses or lack of final course grade data, for a completion rate of 177/192 (92%).

**Validity and Reliability**

The initial draft of the *Being Known Survey* (BKS) was assessed for face and content validity (Adams, 2003, personal communication). To strengthen the validity and reliability of the BKS, items were examined for placement and for best representing the variables examined. Internal consistency was assessed using Cronbach’s (1951) internal consistency reliability coefficient alpha. Internal consistency reliability coefficient alpha values for the four subscales ranged from .6959 to .8889 indicating acceptable levels of internal consistency. Coefficient alpha values for the four subscales and total scale are as follows: (a) Teacher Treatment/Interaction, .7850; (b) Self/Teacher Expectation, .7492; (c) Safety/Communicate Feelings, .8889; (d) Teacher Interest/Adjustment, .6959; and (e) total BKS, .9153.

The content validity of the survey was maintained by drawing the items from the review of current literature and previously field tested with more than 500 students (Lenz & Adams, 2000). Item analysis of the BKS revealed a response dispersion of .5 for all items, indicating that all items were acceptable.
Data Analysis

To adjust for the lack of a normal distribution, we analyzed the data using a combination of descriptive statistical measures and Analysis of Variance (ANOVA) methods. Group differences were examined using these variables: (a) sex, (b) age, (c) race, (d) free or reduced-price lunch eligibility, (e) whether the student currently or previously lived in out-of-home care, (f) current grade level, (g) name of the teacher for the class period the survey was completed, and (h) the class period during which the survey was completed.

Limitations of the Research Design

Because the study included only students from a single high school, it necessitated an intact group design, which limits the generalizability of the results. However, the lack of random assignment is not an issue in this study because it is descriptive in nature. In addition, no experimental groups were used. It is possible that those students and teachers who were willing to participate in the study introduced a degree of self-selection and, therefore, bias in the research. (Babbie, 1995).

Items in the BKS may not address all or even the most important factors for students. In addition, the specific items chosen for the BKS, while providing information on the study sample demographics and perceptions of respondents, may not be the most relevant to students in their perceptions of the classroom climate and being known by the teacher.

Using self-report surveys has inherent weaknesses. These types of surveys may not measure a full sense of social processes occurring in their natural settings; moreover, standardizing data, while being an advantage to data analysis, is also a weakness. Standardized response options and formats assess in general terms attitudes, orientation, and experience, but they may miss aspects of the variables being studied that are relevant to the respondent thereby
leading to a more superficial coverage of complex social processes than is obtained for other, more individualized data-collection techniques.

Being invited to participate in a study can make the respondent feel special or unnatural, resulting in artificial or biased responses. Surveys are also vulnerable to over-rater and under-rater bias because respondents have a tendency to give consistently high or low ratings. Finally, respondents who are accessible and cooperative end up having their data collected and analyzed. Other potential respondents may have responses that could affect the data (Isaac & Michael, 1981, p. 317).

Results

Personal Characteristics

Frequencies for the personal demographic variables of gender, age, ethnicity, qualification for free/reduced lunch, and out-of-home care recipient are summarized in Table 1. The breakdown of the percentage of males and females for the study sample is almost identical to the school population from which the study sample was drawn. Nearly half of the students in the sample (47.9%) were 17 years of age. Approximately 40% of students were 15 years of age (24.8%) or 18 years of age (18.2%). Students aged 16 years were underrepresented, comprising only 9.1% of the study sample.

[Insert Table 1 about here.]

The breakdown of Asian and Caucasian students for the study sample was similar to the ethnic makeup of Asians and Caucasians in the school population. However, the study sample contained twice as many Native Americans (4.1%) compared to the school population (2.0%). Additionally, the study sample included half as many African Americans (3.5% compared to 8.2%) and Hispanic (8.2% compared to 16%) students compared to the school population. In
terms of free/reduced lunch, fewer than 20% of the students in the study sample qualified for the free/reduced lunch program compared to more than 30% of students in the school population. Only 15 (8.9%) students from the study sample had received out-of-home care.

**Academic Characteristics**

Table 2 outlines the variables by grade level of students and final course grade. No 10th- or 12th-grade students participated in the study. As expected, the fewest number of students earned a final course grade of F, and the greatest number earned an A. More than half (56.6%) of the students received an A or B grade, 35.7% of the students received either a C or D grade, and fewer than 8% of the students received a final grade of F.

[Insert Table 2 about here.]

**Composite Scores on the Being Known Survey**

The second section of the BKS was used to measure student perceptions of being known in four areas. The composite scores for the total BKS and the four subscales are presented in Table 3. All items were presented in a 7-point Likert-type scale using one of three different sets of anchors. The final item, however, used a 5-point Likert-type scale because of the content of the item.

[Insert Table 3 about here.]

For the 23-item BKS Total scale, the mean score was 100.23 of a total possible score of 159. The average rating of the composite score of the 23 items was 4.62 on a 7-point scale, with 1 indicating low perceptions and 7 indicating high perceptions of being known.

Analyses determining if there were significant group differences, based on personal and academic variables, in which students perceived being known as measured by the four BKS subscale scores and the total BKS score, follow. Descriptive statistics for the four BKS
subscales, the total BKS scale scores, and final course grades, grouped according to gender and one-way ANOVAs for the gender on the six dependent variables, are presented in Table 4. Overall, mean subscale scores, BKS total scale scores, and final course grades were similar for males and females; however, there was more variability in male ratings. Using mean subscale scores, BKS total scale scores, and final course grades, we conducted a series of one-way Analyses of Variances (ANOVAs) to investigate group differences by gender. There was no significant differences between gender and scores on the subscales, the total BKS scale scores, and the final course grades.

[Insert Table 4 about here.]

Descriptive statistics for the four BKS subscale scores, BKS total scale scores, and final course grades by age group and one-way ANOVA for age on the six dependent variables appear in Table 5. The oldest students (18.00-18.99 years, group 4) had the highest mean ratings for the four BKS subscales and the BKS total scale. Overall, older students (17.00-18.99 years, groups 3 and 4) compared to younger students (15.00-16.99 years, groups 1 and 2) had higher final course grades and gave higher ratings on the four BKS subscales and the BKS total score.

[Insert Table 5 about here.]

Descriptive statistics for the four BKS subscales, the BKS total scores, and final course grades, grouped according to participation in the free/reduced lunch program and one-way ANOVAs for free/reduced lunch program participation on the six dependent variables, appear in Table 6. The figures did not reveal any group differences in subscales or BKS total scale ratings. Neither did a series of one-way ANOVAs examining differences in students’ scores by free/reduced lunch program participation.

[Insert Table 6 about here.]
Table 7 presents descriptive statistics for the four BKS subscales, the BKS total scale scores, and final course grades, grouped according to student grade level and one-way ANOVAs for student grade level on the six dependent variables. Mean ratings were highest among 11th-grade students for all subscales and the BKS total scale. A series of one-way ANOVAs comparing mean subscale, BKS total scale, and final course grades by student grade level revealed significant group differences for the Safety/Communicate Feelings and the Self/Teacher Expectation subscales, the BKS total scores, and final course grades.

[Insert Table 7 about here.]

Table 8 presents descriptive statistics for the four BKS subscales and the BKS total scale scores grouped according to final course grade and one-way ANOVAs for final course grades on the six dependent variables. For the Self/Teacher Expectation subscale, the Teacher Treatment/Interaction subscale, and BKS total scale, students receiving grades of C and F had the lowest mean ratings. With the exception of Teacher Treatment/Interaction subscale, the lowest mean ratings were given by students who earned a C as the final course grade. For the Teacher Interest/Adjusts Teaching subscale, the highest mean ratings were given by students who received either a D or an F as the final course grade. For the Self/Teacher Expectation subscale, the highest mean ratings were given by students who earned either an A or a B for the final course grade. Students who earned a final course grade of B responded with highest mean ratings for the Safety/Communicate Feelings subscale, the Teacher/Treatment Interaction subscale, and the BKS total scale scores.

[Insert Table 8 about here.]

In Table 9, a series of one-way ANOVAs comparing mean subscale and BKS total scale scores by final course grade revealed significant group differences for Self/Teacher Expectations
subscale score ratings, \( F(4, 167) = 4.483, p = <.01 \). Post hoc analysis revealed that there were significant differences in participant ratings between students who earned a C and students earning an A \( (M_D = -3.199, p = <.01) \) or B \( (M_D = -2.701, p < .05) \).

[Insert Table 9 about here.]

The four BKS subscales, BKS total scale scores, and final course grade scores were subjected to a two-way ANOVA having two levels of gender (male, female) and two levels of free/reduced lunch program participation (yes, no). The analysis in Table 10 yielded no significant main effects for the students’ gender or for free/reduced lunch program participation. However, the interaction effect for gender by free/reduced lunch program participation was significant, \( F(1, 163) = 4.766, p < .05 \), with males in the program indicating higher Self/Teacher Expectation scores \( (M = 19.14, SD = 2.905) \) than those not participating in the program \( (M = 17.5, SD = 4.118) \). However, females participating in the program had lower Self/Teacher Expectation scores \( (M = 19.05, SD = 3.489) \) than females who did not.

[Insert Table 10 about here.]

**Discussion**

In this study, we examined two objectives to gain a better understanding of student perceptions of being known by the teacher and academic achievement. The first was to explore the similarities and differences of student perceptions of being known by the teacher based on five personal demographic and three academic demographic characteristics of the participants. The second was to determine if there were differences in student perceptions of being know and academic achievement. The results of this study add new understandings to the current body of knowledge regarding academic achievement and student and teacher interactions.
Teacher Interest and Ability to Adjust Teaching

Students’ perceptions of teachers’ interest in the students’ learning and the extent to which teachers adjusted their strategies to meet the learning needs of their students were rated moderately. Overall, students were most satisfied with teachers’ willingness to allow students to explain or discuss their academic difficulties and the teachers’ responses to these problems and concerns. Especially noteworthy were the consistently low ratings, across all person and academic variable groups, given to student perceptions of the extent that teachers solicit feedback from students about improving their classroom practice.

Feeling Safe and Ability Communicating Feelings

We found that student perceptions of feeling safe while at school and communicating situations or concerns related to their personal safety or the safety of others were the lowest of all constructs assessed in this study. Students indicated they were most reluctant to share instances when they were thinking about doing something harmful or illegal or when they had problems about which they were concerned. While the ratings were still low, students felt most comfortable sharing in-school problems with their teachers; older students perceived higher levels of safety and the ability to communicate safety-related issues with their teachers.

Self and Teacher Expectations

Student ratings of self and teacher expectations indicated they were slightly satisfied with meeting expectations for academic goals and communicating course progress. Group differences existed among various academic and personal characteristic categories. Compared to younger students, older students indicated they were more satisfied with how they perceived teachers graded them, knowing their academic goals for the future, and teachers informing them about course progress. Students were significantly less satisfied with one teacher than they were with
other teachers who participated in the study. Students in the 11th grade were typically more satisfied than ninth-grade students. Student ratings of how they perceived teachers graded them, communicated course progress, and explained expectations of their own grades were typically higher among those students earning higher final course grades. Males receiving free/reduced lunch indicated greater satisfaction while females receiving free-reduced lunch indicated less satisfaction with self and teacher expectations of course grades, course progress, and goals for the future.

**Teacher Treatment and Interaction**

Overall, student perceptions indicated they were more comfortable with the academic relationship than the personal relationship they had with their teachers. Student perceptions of teacher treatment and interaction showed higher ratings than the other three subscales when the items addressed academic issues. However, when students rated nonacademic items or items relating to personal issues, the ratings were lower.

**Academic Achievement**

After examining academic achievement measured by final course grades, we found a few findings noteworthy. Students did perceive their teachers kept them informed of their progress and grades, with students earning the highest course grades indicating the highest perception of being known and knowing academic expectations of their teachers. A curvilinear pattern of student levels of perceiving being known emerged. Students with final course grades of C perceived themselves to be less known by the teacher. Conversely, students with final course grades of A’s and B’s and those students with D’s and F’s indicated higher levels of being known than the C students. Finally, students receiving B grades had the highest ratings of being known across the Safety/Communicate Feelings and Teacher Treatment/Interaction subscales.
Older, non-Caucasian students felt safer, more known by their teachers, and more satisfied with the grading system and the degree to which the teacher let them know their course progress, yet they did worse academically than Caucasian students.

**Conclusions**

Overall perceptions of being known may reflect both a comfort with the school environment and familiarity with school routines as well as reluctance by students to share personal or threatening thoughts, feelings, or behaviors with their teachers. In addition, larger class sizes, coupled with demands on academic learning time, leave teachers with less time to spend on students’ problems. These may be contributing factors to lower perceived satisfaction with items related to interpersonal relationships between students and teachers. This supports Libbey’s (2004) contention that educators forego attending to the affective needs of students in order to focus on academic requirements—especially meeting state and federal academic standards.

In summary, the results of this study support the contention that a positive learning environment in which students feels safe or able to communicate their feelings or have teachers with whom the students feel are approachable and able to actively listen to students’ feelings of isolation, rejection, and disappointment have a higher level of academic achievement. Students’ low perception of feeling safe at school is an area that needs particular attention because a student focused on issues of safety has less physical and mental energy available to focus on learning. Because of the limited sample size in this study (\(N = 177\)) and the use of only Caucasian and non-Caucasian student groups, the role or influence of ethnicity in student perception of being known was not adequately addressed.
Recommendations for Further Research

While this study addressed important issues related to student perceptions of being known and student academic success, other areas of investigation would provide further understanding of the role that feeling known by the teacher has in student academic success. First, information about students who have dropped out of school as well as students who chose not to participate in the study may have resulted in the loss of valuable information regarding the relationship between student perception of being known and subsequent academic success or failure. Information from these two groups may provide clues to weaknesses in the social and academic environment of the classroom and problems in forming a positive interpersonal relationship with teachers who foster academic success. Second, this study did not examine the effect that different classroom environments have on students’ perceptions of being known. Further research examining the relationship between variables related to aspects of being known and different types of classroom environments would also be a valuable avenue of study. Third, classroom environments are defined, in part, by the type of instructional delivery or pedagogy employed by the teacher. While we did not address this, it would be prudent to extend the study of Traynor (2002) by investigating the relationship between being known and instructional types such as authoritative, coercive, laissez-faire, intrinsic, and task-oriented.

When educators gain a better understanding of a student’s sense of belonging or being known, they can work toward providing a classroom environment that fosters more positive and safer student-teacher relationships. This study has revealed that such action on the part of teachers may result in higher student involvement or investment in the school milieu, with students assuming a more active participation in their own learning.
References


Tables

Table 1

Demographic Variables by Study Sample and School Population

<table>
<thead>
<tr>
<th>Demographic Variable</th>
<th>Study Sample</th>
<th>School Population</th>
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</thead>
<tbody>
<tr>
<td>Gender $\ (n=171)$</td>
<td>N=177</td>
<td>N*=1529</td>
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<tr>
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<td>83</td>
<td>768</td>
</tr>
<tr>
<td>Female</td>
<td>88</td>
<td>761</td>
</tr>
<tr>
<td>Female</td>
<td>88</td>
<td>761</td>
</tr>
<tr>
<td>Male</td>
<td>83</td>
<td>768</td>
</tr>
<tr>
<td>Age $\ (n=165)$</td>
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<tr>
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</tr>
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<td>47.9</td>
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<td>18.2</td>
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<td>Ethnicity $\ (n=171)$</td>
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<tr>
<td>African American</td>
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<td>3.5</td>
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<td>Native American</td>
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<td>Asian</td>
<td>27</td>
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<td>Caucasian</td>
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<td>65.5</td>
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<td>Hispanic</td>
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<td>8.2</td>
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<tr>
<td>Other</td>
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<td>2.9</td>
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<td>Qualifies for Free/Reduced Lunch $\ (n=165)$</td>
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<td>No</td>
<td>133</td>
<td>80.6</td>
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<tr>
<td>Received Out of Home Care $\ (n=168)$</td>
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<td>Yes</td>
<td>15</td>
<td>8.9</td>
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<tr>
<td>No</td>
<td>153</td>
<td>91.1</td>
</tr>
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</table>

Note. * = numbers may not total 100% due to rounding error; n/a = information not available.
Table 2

*Description of Study Sample by Academic Variables*

<table>
<thead>
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<th>Demographic Variable</th>
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<td>Grade Level of Student</td>
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<tr>
<td>9</td>
<td>57</td>
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</tr>
<tr>
<td>11</td>
<td>112</td>
<td>66.3</td>
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<tr>
<td>Final Course Grade</td>
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<tr>
<td>A</td>
<td>50</td>
<td>29.8</td>
</tr>
<tr>
<td>B</td>
<td>45</td>
<td>26.8</td>
</tr>
<tr>
<td>C</td>
<td>33</td>
<td>19.6</td>
</tr>
<tr>
<td>D</td>
<td>27</td>
<td>16.1</td>
</tr>
<tr>
<td>F</td>
<td>13</td>
<td>7.7</td>
</tr>
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</table>
Table 3

*Composite Scores for Being Known Survey Scale and Four BKS Subscales*

<table>
<thead>
<tr>
<th>Scale</th>
<th>Items</th>
<th>Total&lt;sup&gt;b&lt;/sup&gt;</th>
<th>Item Mean</th>
<th>M</th>
<th>SD</th>
<th>Range</th>
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<tbody>
<tr>
<td>Being Known Total Scale</td>
<td>1-23</td>
<td>159</td>
<td>4.620</td>
<td>100.23</td>
<td>18.919</td>
<td>42-147</td>
</tr>
<tr>
<td>Teacher Interest/Adjusts Tchng</td>
<td>2, 4, 5, 13,19, 21</td>
<td>42</td>
<td>4.710</td>
<td>28.27</td>
<td>5.527</td>
<td>13-42</td>
</tr>
<tr>
<td>Safety/Communicate Feelings</td>
<td>10, 11, 15-18, 22</td>
<td>49</td>
<td>3.079</td>
<td>21.55</td>
<td>8.893</td>
<td>7-46</td>
</tr>
<tr>
<td>Self/Teacher Expectation</td>
<td>8, 12, 20, 23</td>
<td>26</td>
<td>4.913</td>
<td>18.23</td>
<td>3.794</td>
<td>5-26</td>
</tr>
<tr>
<td>Teacher Treatment/Interaction</td>
<td>1, 3, 6, 7, 9, 14</td>
<td>42</td>
<td>5.360</td>
<td>32.18</td>
<td>5.087</td>
<td>16-42</td>
</tr>
</tbody>
</table>

*Note.* <sup>a</sup><sup>N</sup> = 177  <sup>b</sup>Total points possible for the *Being Known Survey* scale and each subscale.
Table 4

Means Scores by Gender for the Four Subscales of the BKS, BKS Total, and Final Course Grade and One-Way ANOVA’s for Gender on the Six Dependent Variables

<table>
<thead>
<tr>
<th>Variables</th>
<th>N</th>
<th>M</th>
<th>SD</th>
<th>ANOVA F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teacher Interest/Adjusts Teaching</td>
<td></td>
<td></td>
<td></td>
<td>F(1, 169) = .162</td>
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<tr>
<td>Male</td>
<td>83</td>
<td>28.42</td>
<td>5.345</td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>88</td>
<td>28.08</td>
<td>5.688</td>
<td></td>
</tr>
<tr>
<td>Safety/Communicate Feelings</td>
<td></td>
<td></td>
<td></td>
<td>F(1, 169) = .143</td>
</tr>
<tr>
<td>Male</td>
<td>83</td>
<td>21.86</td>
<td>9.557</td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>88</td>
<td>21.33</td>
<td>8.409</td>
<td></td>
</tr>
<tr>
<td>Self/Teacher Expectation</td>
<td></td>
<td></td>
<td></td>
<td>F(1, 169) = 2.373</td>
</tr>
<tr>
<td>Male</td>
<td>83</td>
<td>17.81</td>
<td>3.921</td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>88</td>
<td>18.69</td>
<td>3.545</td>
<td></td>
</tr>
<tr>
<td>Teacher Treatment/Interaction</td>
<td></td>
<td></td>
<td></td>
<td>F(1, 169) = .222</td>
</tr>
<tr>
<td>Male</td>
<td>83</td>
<td>32.00</td>
<td>5.362</td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>88</td>
<td>32.37</td>
<td>4.806</td>
<td></td>
</tr>
<tr>
<td>Being Known Total</td>
<td></td>
<td></td>
<td></td>
<td>F(1, 169) = .018</td>
</tr>
<tr>
<td>Male</td>
<td>83</td>
<td>100.08</td>
<td>19.449</td>
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</tr>
<tr>
<td>Female</td>
<td>88</td>
<td>100.47</td>
<td>18.587</td>
<td></td>
</tr>
<tr>
<td>Final Course Grade</td>
<td></td>
<td></td>
<td></td>
<td>F(1, 162) = 1.234</td>
</tr>
<tr>
<td>Male</td>
<td>80</td>
<td>2.43</td>
<td>1.339</td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>83</td>
<td>2.65</td>
<td>1.254</td>
<td></td>
</tr>
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</table>

Note. *N = 171.*
### Table 5

**Means Scores by Age Group for four subscales of the BKS, BKS Total Score, and Final Course Grade and One-Way Analysis of Variance for Age on the Six Dependent Variables**

<table>
<thead>
<tr>
<th>Age Group</th>
<th>n</th>
<th>M</th>
<th>SD</th>
<th>ANOVA F</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Teacher Interest/Adjusts Teaching</strong></td>
<td></td>
<td></td>
<td></td>
<td>F(3, 163) = .517</td>
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<tr>
<td>Age Group 1 (15.00-15.99)</td>
<td>41</td>
<td>27.34</td>
<td>5.058</td>
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</tr>
<tr>
<td>Age Group 2 (16.00-16.99)</td>
<td>15</td>
<td>27.80</td>
<td>6.657</td>
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</tr>
<tr>
<td>Age Group 3 (17.00-17.99)</td>
<td>79</td>
<td>28.48</td>
<td>5.435</td>
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</tr>
<tr>
<td>Age Group 4 (18.00-18.99)</td>
<td>29</td>
<td>28.69</td>
<td>5.231</td>
<td></td>
</tr>
<tr>
<td><strong>Safety/Communicate Feelings</strong></td>
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<td></td>
<td></td>
<td>F(3, 163) = 4.558  **</td>
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<tr>
<td>Age Group 1 (15.00-15.99)</td>
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<td>17.59</td>
<td>7.965</td>
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<tr>
<td>Age Group 2 (16.00-16.99)</td>
<td>15</td>
<td>20.80</td>
<td>9.748</td>
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<tr>
<td>Age Group 3 (17.00-17.99)</td>
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<td>22.44</td>
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<td>Age Group 4 (18.00-18.99)</td>
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<tr>
<td><strong>Self/Teacher Expectation</strong></td>
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<td></td>
<td></td>
<td>F(3, 163) = 8.463  ***</td>
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<td>19.40</td>
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<td>Age Group 4 (18.00-18.99)</td>
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<td>19.38</td>
<td>3.550</td>
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<tr>
<td><strong>Teacher Treatment/Interaction</strong></td>
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<td>F(3, 163) = 1.154</td>
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<td>Age Group 2 (16.00-16.99)</td>
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<td>4.752</td>
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<td>33.10</td>
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<tr>
<td><strong>Being Known Total</strong></td>
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<td>F(3, 163) = 3.991  **</td>
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<td>17.653</td>
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<td><strong>Final Course Grade</strong></td>
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<td>.904</td>
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*Note.* *p < .05. **p < .01. ***p < .001.
Table 6

Mean Scores by Free/Reduced Lunch for the Four BKS Subscales, BKS Total Score, and Final Course Grade and One-Way Analysis of Variance for Free or Reduced Lunch on Six Dependent Variables

<table>
<thead>
<tr>
<th>Subscale and Scale Scores</th>
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<th>ANOVA F</th>
</tr>
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<td></td>
<td>F(1, 163) = .048</td>
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<td>28.06</td>
<td>4.852</td>
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<td>No Free/Reduced Lunch</td>
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<td>28.30</td>
<td>5.756</td>
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<td>Safety/Communicate Feelings</td>
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<td>F(1, 163) = .004</td>
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<tr>
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<td>21.44</td>
<td>9.591</td>
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<tr>
<td>No Free/Reduced Lunch</td>
<td>132</td>
<td>21.55</td>
<td>8.934</td>
<td></td>
</tr>
<tr>
<td>Self/Teacher Expectation</td>
<td></td>
<td></td>
<td></td>
<td>F(1, 163) = .021</td>
</tr>
<tr>
<td>Free/Reduced Lunch</td>
<td>32</td>
<td>18.19</td>
<td>3.459</td>
<td></td>
</tr>
<tr>
<td>No Free/Reduced Lunch</td>
<td>132</td>
<td>18.30</td>
<td>3.881</td>
<td></td>
</tr>
<tr>
<td>Teacher Treatment/Interaction</td>
<td></td>
<td></td>
<td></td>
<td>F(1, 163) = 1.103</td>
</tr>
<tr>
<td>Free/Reduced Lunch</td>
<td>32</td>
<td>33.16</td>
<td>4.167</td>
<td></td>
</tr>
<tr>
<td>No Free/Reduced Lunch</td>
<td>132</td>
<td>32.11</td>
<td>5.266</td>
<td></td>
</tr>
<tr>
<td>Being Known Total</td>
<td></td>
<td></td>
<td></td>
<td>F(1, 163) = .024</td>
</tr>
<tr>
<td>Free/Reduced Lunch</td>
<td>32</td>
<td>100.84</td>
<td>17.567</td>
<td></td>
</tr>
<tr>
<td>No Free/Reduced Lunch</td>
<td>132</td>
<td>100.26</td>
<td>19.668</td>
<td></td>
</tr>
<tr>
<td>Final Course Grade</td>
<td></td>
<td></td>
<td></td>
<td>F(1, 157) = 2.451</td>
</tr>
<tr>
<td>Free/Reduced Lunch</td>
<td>31</td>
<td>2.23</td>
<td>1.203</td>
<td></td>
</tr>
<tr>
<td>No Free/Reduced Lunch</td>
<td>127</td>
<td>2.63</td>
<td>1.308</td>
<td></td>
</tr>
</tbody>
</table>
Table 7

*Mean Scores by Grade Level of Student for the Four BKS Subscales, BKS Total Score, Final Course Grades, and One-Way Analysis of Variance on the Six Dependent Variables*

<table>
<thead>
<tr>
<th>Dependent Variable</th>
<th>N</th>
<th>M</th>
<th>SD</th>
<th>ANOVA F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teacher Interest/Adjusts Teaching</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9th Grade</td>
<td>57</td>
<td>27.65</td>
<td>5.598</td>
<td>$F(1, 168) = .936$</td>
</tr>
<tr>
<td>11th Grade</td>
<td>112</td>
<td>28.52</td>
<td>5.479</td>
<td></td>
</tr>
<tr>
<td>Safety/Communicate Feelings</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9th Grade</td>
<td>57</td>
<td>18.63</td>
<td>8.547</td>
<td>$F(1, 168) = 10.26 **$</td>
</tr>
<tr>
<td>11th Grade</td>
<td>112</td>
<td>23.18</td>
<td>8.812</td>
<td></td>
</tr>
<tr>
<td>Self/Teacher Expectation</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9th Grade</td>
<td>57</td>
<td>16.49</td>
<td>3.915</td>
<td>$F(1, 168) = 20.73 ***$</td>
</tr>
<tr>
<td>11th Grade</td>
<td>112</td>
<td>19.11</td>
<td>3.322</td>
<td></td>
</tr>
<tr>
<td>Teacher Treatment/Interaction</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9th Grade</td>
<td>57</td>
<td>31.30</td>
<td>5.127</td>
<td>$F(1, 168) = 2.472$</td>
</tr>
<tr>
<td>11th Grade</td>
<td>112</td>
<td>32.59</td>
<td>5.005</td>
<td></td>
</tr>
<tr>
<td>Being Known Total</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9th Grade</td>
<td>57</td>
<td>94.07</td>
<td>18.215</td>
<td>$F(1, 168) = 9.55 **$</td>
</tr>
<tr>
<td>11th Grade</td>
<td>112</td>
<td>103.39</td>
<td>18.705</td>
<td></td>
</tr>
<tr>
<td>Final Course Grade</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9th Grade</td>
<td>55</td>
<td>1.49</td>
<td>.858</td>
<td>$F(1, 161) = 79.92 ***$</td>
</tr>
<tr>
<td>11th Grade</td>
<td>107</td>
<td>3.07</td>
<td>1.151</td>
<td></td>
</tr>
</tbody>
</table>

*Note.* $*p < .05$, $**p < .01$, $***p < .001$.  

Table 8

*Mean Scores by Final Grade for the Four Subscales of the BKS and BKS Total Score, and One-Way Analysis of Variance for Final Grade on the Six Dependent Variables*

<table>
<thead>
<tr>
<th>Dependent Variable</th>
<th>N</th>
<th>M</th>
<th>SD</th>
<th>ANOVA F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teacher Interest/Adjusts Teaching</td>
<td></td>
<td></td>
<td></td>
<td>$F(4, 167) = .955$</td>
</tr>
<tr>
<td>A</td>
<td>50</td>
<td>28.12</td>
<td>5.065</td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>45</td>
<td>28.93</td>
<td>5.590</td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>33</td>
<td>27.00</td>
<td>4.521</td>
<td></td>
</tr>
<tr>
<td>D</td>
<td>27</td>
<td>29.37</td>
<td>6.295</td>
<td></td>
</tr>
<tr>
<td>F</td>
<td>13</td>
<td>29.23</td>
<td>7.201</td>
<td></td>
</tr>
<tr>
<td>Safety/Communicate Feelings</td>
<td></td>
<td></td>
<td></td>
<td>$F(4, 167) = 1.694$</td>
</tr>
<tr>
<td>A</td>
<td>50</td>
<td>21.64</td>
<td>7.706</td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>45</td>
<td>23.89</td>
<td>8.845</td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>33</td>
<td>18.64</td>
<td>7.952</td>
<td></td>
</tr>
<tr>
<td>D</td>
<td>27</td>
<td>21.63</td>
<td>9.548</td>
<td></td>
</tr>
<tr>
<td>F</td>
<td>13</td>
<td>22.15</td>
<td>12.786</td>
<td></td>
</tr>
<tr>
<td>Self/Teacher Expectation</td>
<td></td>
<td></td>
<td></td>
<td>$F(4, 167) = 4.483$ **</td>
</tr>
<tr>
<td>A</td>
<td>50</td>
<td>19.32</td>
<td>3.407</td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>45</td>
<td>18.82</td>
<td>3.242</td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>33</td>
<td>16.12</td>
<td>3.507</td>
<td></td>
</tr>
<tr>
<td>D</td>
<td>27</td>
<td>18.59</td>
<td>3.944</td>
<td></td>
</tr>
<tr>
<td>F</td>
<td>13</td>
<td>17.62</td>
<td>4.61</td>
<td></td>
</tr>
<tr>
<td>Teacher Treatment/Interaction</td>
<td></td>
<td></td>
<td></td>
<td>$F(4, 167) = .999$</td>
</tr>
<tr>
<td>A</td>
<td>50</td>
<td>32.00</td>
<td>4.994</td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>45</td>
<td>33.47</td>
<td>4.203</td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>33</td>
<td>31.64</td>
<td>4.091</td>
<td></td>
</tr>
<tr>
<td>D</td>
<td>27</td>
<td>32.30</td>
<td>5.849</td>
<td></td>
</tr>
<tr>
<td>F</td>
<td>13</td>
<td>31.00</td>
<td>7.895</td>
<td></td>
</tr>
<tr>
<td>Being Known Total</td>
<td></td>
<td></td>
<td></td>
<td>$F(4, 167) = 1.983$</td>
</tr>
<tr>
<td>A</td>
<td>50</td>
<td>101.08</td>
<td>17.199</td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>45</td>
<td>105.11</td>
<td>16.845</td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>33</td>
<td>93.39</td>
<td>13.266</td>
<td></td>
</tr>
<tr>
<td>D</td>
<td>27</td>
<td>101.89</td>
<td>22.268</td>
<td></td>
</tr>
<tr>
<td>F</td>
<td>13</td>
<td>100.00</td>
<td>28.501</td>
<td></td>
</tr>
</tbody>
</table>

*Note.* a$N = 168; *p < .05. **p < .01. ***p < .001.
Table 9

*Post Hoc Analysis of Final Course Grade by Self/Teacher Expectation Subscale Scores*\(^a\)

<table>
<thead>
<tr>
<th>Course Grade Group 1</th>
<th>Course Grade Group 2</th>
<th>(M_D)</th>
<th>(SE)</th>
<th>(p)</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>A</td>
<td>-3.199</td>
<td>.802</td>
<td>.001 **</td>
</tr>
<tr>
<td></td>
<td>B</td>
<td>-2.701</td>
<td>.820</td>
<td>.012 *</td>
</tr>
<tr>
<td></td>
<td>D</td>
<td>-2.471</td>
<td>.928</td>
<td>.085</td>
</tr>
<tr>
<td></td>
<td>F</td>
<td>-1.494</td>
<td>1.171</td>
<td>1.000</td>
</tr>
</tbody>
</table>

*Note. \(^a\)N = 168; Bonferroni test of mean differences for multiple comparisons used; \(*p < .05, **p < .01, ***p < .001.*\)
Table 10

Two-Way ANOVA of Gender and Free/Reduced Lunch on the Six Dependent Variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>Df</th>
<th>SS</th>
<th>MS</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teacher Interest/Adapts Teaching</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td>1</td>
<td>16.702</td>
<td>16.702</td>
<td>.526</td>
</tr>
<tr>
<td>Free/Reduced Lunch</td>
<td>1</td>
<td>.487</td>
<td>.487</td>
<td>.015</td>
</tr>
<tr>
<td>Gender x Free/Reduced Lunch</td>
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<td>9.193</td>
<td>9.193</td>
<td>.289</td>
</tr>
<tr>
<td>Residual</td>
<td>159</td>
<td>5049.701</td>
<td>31.759</td>
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</tr>
<tr>
<td>Safety/Communicate Feelings</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td>1</td>
<td>15.352</td>
<td>15.352</td>
<td>.184</td>
</tr>
<tr>
<td>Free/Reduced Lunch</td>
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<td>.128</td>
<td>.128</td>
<td>.002</td>
</tr>
<tr>
<td>Gender x Free/Reduced Lunch</td>
<td>1</td>
<td>9.246</td>
<td>9.246</td>
<td>.111</td>
</tr>
<tr>
<td>Residual</td>
<td>159</td>
<td>13261.421</td>
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<tr>
<td>Self/Teacher Expectation</td>
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<tr>
<td>Gender</td>
<td>1</td>
<td>.147</td>
<td>.147</td>
<td>.010</td>
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<tr>
<td>Free/Reduced Lunch</td>
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<td>.011</td>
<td>.011</td>
<td>.001</td>
</tr>
<tr>
<td>Gender x Free/Reduced Lunch</td>
<td>1</td>
<td>66.831</td>
<td>66.831</td>
<td>4.766 *</td>
</tr>
<tr>
<td>Residual</td>
<td>159</td>
<td>2229.520</td>
<td>14.022</td>
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</tr>
<tr>
<td>Teacher Treatment/Interaction</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td>1</td>
<td>1.810</td>
<td>1.810</td>
<td>.069</td>
</tr>
<tr>
<td>Free/Reduced Lunch</td>
<td>1</td>
<td>27.790</td>
<td>27.790</td>
<td>1.061</td>
</tr>
<tr>
<td>Gender x Free/Reduced Lunch</td>
<td>1</td>
<td>.343</td>
<td>.343</td>
<td>.013</td>
</tr>
<tr>
<td>Residual</td>
<td>159</td>
<td>4164.940</td>
<td>26.195</td>
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</tr>
<tr>
<td>Being Known Total</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td>1</td>
<td>49.606</td>
<td>49.606</td>
<td>.131</td>
</tr>
<tr>
<td>Free/Reduced Lunch</td>
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<td>18.662</td>
<td>18.662</td>
<td>.049</td>
</tr>
<tr>
<td>Gender x Free/Reduced Lunch</td>
<td>1</td>
<td>220.029</td>
<td>220.029</td>
<td>.583</td>
</tr>
<tr>
<td>Residual</td>
<td>159</td>
<td>60012.225</td>
<td>377.435</td>
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</tr>
<tr>
<td>Final Course Grade</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td>1</td>
<td>6.165</td>
<td>6.165</td>
<td>3.739</td>
</tr>
<tr>
<td>Free/Reduced Lunch</td>
<td>1</td>
<td>5.533</td>
<td>5.533</td>
<td>3.356</td>
</tr>
<tr>
<td>Gender x Free/Reduced Lunch</td>
<td>1</td>
<td>4.207</td>
<td>4.207</td>
<td>2.552</td>
</tr>
<tr>
<td>Residual</td>
<td>153</td>
<td>252.274</td>
<td>1.649</td>
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</tr>
</tbody>
</table>

Note. *p < .05. **p < .01. ***p < .001.
<table>
<thead>
<tr>
<th><strong>Title of Submission:</strong></th>
<th><em>The Role of Government Policy and Practice on Higher Education Tuition and Fee Charges and Financial Aid Programs</em></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Topic Area:</strong></td>
<td>Education Policy and Leadership</td>
</tr>
<tr>
<td><strong>Presentation Format:</strong></td>
<td>Paper session</td>
</tr>
<tr>
<td><strong>Short Description of Presentation:</strong></td>
<td>This study was intended to examine the role of government policy and practice on higher education tuition and fee charges. This study illustrated what government could do and should do to ensure affordable higher education and effective financial aid programs.</td>
</tr>
<tr>
<td><strong>Paper Author:</strong></td>
<td>Helen O. Au, Ph.D., Director of Marketing/Assistant Director of the Curriculum Research &amp; Development Group (CRDG) in the College of Education at the University of Hawaiʻi at Mānoa</td>
</tr>
<tr>
<td><strong>Full Name:</strong></td>
<td>Helen O. Au</td>
</tr>
<tr>
<td><strong>Department:</strong></td>
<td>Curriculum Research &amp; Development Group, College of Education</td>
</tr>
<tr>
<td><strong>University:</strong></td>
<td>University of Hawaiʻi at Mānoa</td>
</tr>
<tr>
<td><strong>Email Address:</strong></td>
<td><a href="mailto:helenau@hawaii.edu">helenau@hawaii.edu</a></td>
</tr>
</tbody>
</table>
The Purpose of this research study is to examine the role of government policy and practice on higher education tuition and fee charges and to explore what government should do to ensure affordable higher education and effective financial aid programs. Case study was used to answer the two research questions: 1) How do government policy and practice play a role on higher education tuition and fee charges? 2) What are some of the pros and cons of the current federal financial aid programs and what could be improved of those programs?

Findings from this study provided support for the need for the government to review and control higher education tuition and fee charges as well as to improve the student financial aid program’s policies and practices. The study suggested that government plays an important role to ensure American higher education is affordable for “all” citizens; government should ensure that financial aid programs are indeed providing the necessary help not just to allow students to gain access to and persist in school, but also to graduate “without” the debt burdens. Instead of relying primarily on loans as a means to assist students, more grants, scholarships, and work-study programs should be available for students to finance their college education. The government needs to work closely with students, families, K–12 schools, higher education institutions, and the private and public sectors to resolve this high tuition and high student loans crisis. More incentives, such as tax deductions, should be provided to individuals and private sector entities to encourage them to offer scholarship opportunities to more students. More frequent public service announcements educating citizens about the different ways to finance and plan for college education, as well as highlighting the consequences of loans, should be made available in K–12 schools, at higher education institutions, and via the mass media. Federal student loan interest rates should be kept at a lower rate; the current rate of 6.8% is much higher than the current mortgage rate. More funding should be provided to the work-study program, so that students can earn wages on campus while gaining valuable on-the-job training experience and skills. Scholarship offerings can be merit-based, income-based, need-based or any other creative form, but should widen the range of eligible recipients who have the desire to access and to persist in college. Hence, everyone, including students who come from the low socio-economic background or have not done really well in school, would still have a chance not just to access and persist in college, but to graduate from college “without” a huge debt on their shoulders.
In addition, this study revealed that government needs to work with higher education institutions to monitor, regulate, and evaluate tuition and fee charges, especially at private schools, on a regular basis so that education will be affordable for all citizens. Any for-profit private schools that utilize recruitment tactics to allure students to sign up for expensive college programs should be penalized and sanctioned with hefty fines. Furthermore, the government should work with schools’ financial aid offices to control the amount of loans that students can borrow. Loan checks should only be drawn to each semester’s necessary school-related expenses so that students will not end up borrowing more money than they actually need for school. Moreover, greater incentives should be provided to student loan borrowers to encourage them to make their payments on time.

What has the government done so far to address this nation-wide issue? There is an urgent need for the U.S. government to listen to their citizens’ voices to improve their policies and practices for providing affordable higher education in the 21st century and beyond.

*Keywords: Policy and Practice, Tuition and Fees, Financial Aid Programs, Affordable Higher Education*
Title: Portfolio Development in a Simulated Village Pharmacy Experience

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Abstract:

Background:
To support their changing roles, the pharmacist needs to develop and maintain up-to-date expertise and skills for application in every day practice. Learning portfolios have become accepted for use in practice and education as part of the maintenance of professional competency requirements in Continuing Professional Development (CPD).

Research Objectives:
To develop student competency in using learning portfolios to record evidence of independent learning and encourage reflective practice for future work-place application.

Method:
Technology was used to develop a simulated model of a village pharmacy for students to learn pharmaceutics and associated professional skills in context. Under guidance, and with mentoring, students were set tasks to be completed as portfolio items in class time. Final presentation of the work was made as a major assessment item in the course.

Discussion:
Despite clear guidelines students initially found the work challenging and appeared to struggle with the development of a learning portfolio, particularly identifying learning needs and reflective practice. They also commented that the marks allocated for this assessment did not fairly reflect the amount of work that was required. With mentoring students became more confident and achieved very satisfactory results. Developing competency in completing a learning portfolio for CPD gives students the advantage of an essential skill for use in the work-place.
Title: Leadership in creative spaces and creating space for leadership

Topic area of submission: Leadership

Presentation format: Paper Session

Description of the presentation: PPT presentation will outline the research project, findings and discussion, see abstract

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Abstract:

Research in a public primary school in Australia focused on innovative leadership in a local community known for its diversity. In this school the creation of new learning spaces encouraged community participation. These spaces are known as ‘Stimulating Learning Platforms’ (SLPs). In this qualitative case study research, children, parents and teachers were invited to give their perspective about the SLPs and the effects of the SLPs on teaching and learning were discussed. Key information was provided by the Principal and his leadership drove through new and innovative planning for these learning spaces.

Qualitative methods included focus groups with children who were also invited to draw the learning spaces and interviews took place with teachers, parents and with the Principal. The inquiry revealed the background to the Stimulating Learning Platforms and the philosophy behind their construction. The words of participants showed that working within classrooms with SLPs encouraged a new orientation toward engagement. Findings show that the Stimulating Learning Platforms comprise creative spaces; encourage a language of negotiation; construct a pedagogical approach that includes play and contribute toward transformation and change in the school environment. We present aspects of a leadership vision that initially seemed to be problematic (for example, Disneyfication) but in practice to be a source of inspiration for the future.
Preferred Learning Styles and Effective Teaching Techniques

for Exercise Science Related Programs

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Introduction

Course work for students in university exercise science type programs often focus on information helpful for becoming a health professional or health related scientific researcher. It is typical for an undergraduate exercise science program to help prepare graduates for further education by fulfilling many of the prerequisites necessary for medical school, dental school, physical therapy school, and other health related graduate degrees. Research explaining effective teaching methods for this type of course content can be used to enhance teaching and likely improve student understanding. By knowing and implementing effective teaching techniques in exercise science, faculty in this field can help better prepare future health professionals. Therefore, this paper will 1) Explain how students in exercise science courses prefer to learn and 2) Explain teaching techniques specific to preferred learning in the field of exercise science and related fields.

Preferred Learning Styles

To understand what teaching techniques are best applied to exercise science students, it is important to determine if there is a general learning mode favored by this group of students. The V.A.R.K. scale is a tool commonly used to assess learning modes or styles (Fleming, 1995). Specifically, this scale can be used to report an individual’s favorable mode of learning as being “visual” (V), “aural” (A), “reader/writer” (R), or “kinesthetic” (K) (Fleming, 1995, pp 308–309). Mode of learning is not limited to only one type, but can also be determined as having multiple modes. For example, a person who favors multiple modes of learning would have similarly higher scores in at least two of the learning modes, compared to someone that scores substantially higher in just one mode of learning (Fleming, 1995).
Recently, V.A.R.K. has been used to assess graduate students in the health related fields of medicine (Baykan & Nacar, 2007) and dentistry (Murphy, Gray, Straja, & Bogert, 2004) to determine that these groups of students generally favor multiple modes of learning. This means that the majority of these students learn best by using some combination of V.A.R.K (i.e., mostly A. & K. and V. & K in fields of medicine and V. & R. in dentistry). More particularly, Breckler, Joun, and Ngo (2009) used this same scale to confirm similar learning preferences among undergraduate students with comparable future health professional career plans as graduate students studying in their specific health profession. In other words, undergraduate premedical students have similar learning preferences as first year medical students and likewise with other undergraduate and graduate students with similar health career interests. When differentiating undergraduate students interested in a research career versus a professional health career, undergraduate students interested in pursuing research in graduate school favored a single mode of learning (i.e., mostly K) rather than multiple modes (Breckler, Joun, & Ngo, 2009). This demonstrates different learning preferences within undergraduate exercise science students related to future career plans to be a researcher or other health professional.

Some topics like genetics (Hoskins, Stevens, & Nehm, 2007), the circulatory system (Kurbel, Gros, & Maric 2009), and physiology (Cheng, 2010; Kibble 2009; Gonzalez, Palencia, Umana, Galindo, & Villafrade 2008; Modell, DeMiero & Rose, 2009), that are introduced in undergraduate course work, have also been researched in regard to teaching techniques and learning behaviors specific among medical students. Because learning styles are similar among undergraduate prehealth majors and their
corresponding peers in graduate programs (Baykan & Nacar, 2007; Murphy, Gray, Straja, & Bogert, 2004; Breckler, Jou, & Ngo, 2009), it appears acceptable for exercise science instructors to consult effective teaching techniques among medical students as well and apply them to undergraduate courses when needed. Not only will teachers gain effective teaching techniques by doing this, but students may also become better prepared for advanced degrees because of more effective teaching. It may be especially helpful for faculty teaching somewhat unique undergraduate courses that are similar to those offered in graduate programs. This has potential to provide effective teaching techniques for undergraduate course that have not been researched due to the uniqueness of the course, but have been researched in graduate course work.

Teaching Tools

It is logical that some topics or courses in exercise science may better engage a specific teaching technique and learning style than other topics or courses. Also, some teachers may naturally favor teaching to a specific learning mode by using a single teaching technique more than another technique. It seems important and necessary for each teacher to vary teaching styles in order to accommodate different learning styles for the students. Reviewing several teaching modalities in courses and topics commonly found in exercise science programs will help reveal effective teaching techniques, specific to the course content in this field of study. The teaching techniques presented will demonstrate multiple ways to engage students in each of the components of V.A.R.K. These include teaching techniques involving technology, classroom settings, and laboratory settings for exercise science themed classes.
In general, computers have long been shown to be an effective teaching tool on a university level by improving the atmosphere and productivity of students in the class (Kulik, J., Kulik, C., & Cohen, 1980). Computers have been further studied and shown to be effective tools in the classroom to promote student learning for exercise science classes by using a computer modeling program (Kapitan, 2008). This computer program developed by Kapitan (2008) allows students to learn through the multiple modes of V.A.R.K. For example, this specific program permits a student to actually see a model of the pulmonary gas exchange system (a topic frequently covered in exercise science), in motion and on a screen, which is different than just a still diagram from a text book. This employs a greater use of visual aid and provides clearer comprehension to understand what is taking place in the pulmonary system which can otherwise not be seen. Also, students can actually input changes into the program illustrating the effects of different partial pressures of gas on the pulmonary system (Kapitan 2008). This action of typing in different functions into the program causes them to read and write, activating additional modes of learning. Using a computer program similar to this can be considered an effective teaching technique because it requires multiple modes of learning and provides students with an actual visual of the pulmonary system that is otherwise unavailable to view.

Whether a teacher uses the specific teaching aid developed by Kapitan (2008) to teach the pulmonary system or a different one, the purpose of this teaching aid is to enhance student learning. As more computer programs are developed and studied, future research may indicate what aspects of student learning are enhanced, differentiating the use of each program. Other computer based programs and technology have also been
researched in regard to effective teaching techniques in courses such as anatomy and physiology lectures (Gopal, Herron, Mohn, Hartsell, Jawor, & Blicknstaff, 2010) and physiology laboratories (Gauci, Dantas, Williams, & Kemm, 2009; Dantas & Kemm, 2008) offered in exercise science.

In an attempt to enhance learning in anatomy and physiology courses, teachers can incorporate a teaching technique using an interactive website (Gopal, Herron, Mohn, Hartsell, Jawor, & Blicknstaff, 2010). The terminology in this type of course is generally new for students and can be difficult to learn. Besides memorizing new words, the pronunciation is frequently difficult to say correctly. With only limited contact time in the classroom, students have little time to appropriately hear and memorize pronunciation for new words. A website including pronunciation, spelling practice, and diagrams, was developed specifically for anatomy and physiology and shown to improve test scores, particularly on the cardiovascular system (Gopal, Herron, Mohn, Hartsell, Jawor, & Blicknstaff, 2010). By hearing words students engage their auditory learning behavior and can also read and write (or type) the vocabulary they are trying to memorize. The nature of an interactive website like this appears to be designed for use outside of class to support and enhance student learning through reading and writing, visual, and auditory senses.

An effective teaching technique using technology, such as a personal response system, in a large class setting has also been shown to improve student learning in physiology courses (Gauci, Dantas, Williams, & Kemm, 2009). A personal response system requires participation from the students to read and respond to a question presented on a screen. It can also be used to give feedback and promote in class
discussion and questions (Gauci, Dantas, Williams, & Kemm, 2009). Students that participate in this type of activity have demonstrated significantly higher test scores on physiology midterm and final exams than students participating in traditional lecture courses without this technology (Gauci, Dantas, Williams, & Kemm, 2009). If properly applied, this teaching technique allows students to actively participate in class discussion and immediately test their understanding of a topic. This provides a great opportunity for teachers to know when students need clarification on a topic (Gauci, Dantas, Williams, & Kemm, 2009).

Incorporating an interactive website (Gopal, Herron, Mohn, Hartsell, Jawor, & Blicknstaff, 2010), computer based program (Kapitan, 2008), or personal response system (Gauci, Dantas, Williams, & Kemm, 2009) are all forms of effective teaching techniques using e-learning in and out of the classroom because it requires multiple modes of learning. E-learning is becoming increasingly popular and researched in an attempt to discover the best teaching methods for implementation (Govindasamy, 2002). For example, the use of e-learning combined with active learning in undergraduate physiology labs appears to be an effective teaching technique demonstrated through positive student feedback (Dantas & Kemm, 2008). The combination of e-learning and active learning helps students take what they have learned while interacting in the classroom, and continue to discuss or work on it out of the classroom over the internet (Dantas & Kemm, 2008).

Effective teaching techniques in exercise science are not limited to incorporating technology. Two recent studies demonstrate how traditional research papers can successfully be used to teach topics in this area of study (Tansey, 2008; Gwirtz, 2008).
Using research papers is another way of reviewing the literature and can involve multiple learning modes for students. For example, teachers may assign students to read an article and write a review, have class or group discussions that involve listening and active participation, visually refer to diagrams or figures, or possibly replicate a previous study. Tansey (2008) showed using past literature on a physiology topic (Houston, Sutton, Cymerman, & Reeves, 1987) can help students better understand visually a figure from an earlier article (Houston & Riley, 1947). In addition, Gwirtz (2008) established the effectiveness of using past literature more for reading and discussion to explain important concepts of cardiovascular disease instead of using a figure. These two examples (Dantas & Kemm, 2008; Gwirtz 2008) demonstrate how effective teaching techniques involving past literature can be used to reach students through multiple modes of learning.

In addition to using figures and past research articles, role play is another teaching technique that can include multiple modes of learning, largely including kinesthetic learning. Role play intuitively includes scripts or characters that tell a story. Sturges, Maurer, and Cole (2009) used role play in a physiology class in an attempt to teach a relatively difficult concept known as protein synthesis. Although final tests scores between the experimental class (the class that included role play) and the traditional lecture class did not significantly differ, results showed that students were more involved and satisfied with the course (Sturges, Maurer, & Cole, 2009). In this instance, role play was shown to be just as effective as lecturing in the classroom.

Part of role play requires students to interact with each other. Another teaching technique helping students to interact with each other is through peer instruction or discussion. Giuliodori, Lujan, and DiCarlo (2006) were able to create an atmosphere
where students could instruct one another by allowing them (i.e., the students) to discuss answers with each other after they initially answered a question on their own. To implement this teaching technique in a classroom, teachers can allow students to briefly defend or discuss their answers with other students during in class quizzes and be given an opportunity to change their original answer. This has been proven to be an effective teaching technique for physiology through improving students’ abilities to better solve problems (Giuliodori, Lujan, & DiCarlo, 2006).

Teaching and learning in exercise science is completed in more places than a typical classroom setting. Laboratory visits are a significant part of the curriculum in this field. The setting in a laboratory is fairly different from that of a classroom. Naturally, a classroom will be set up with individual desks or have these desks organized in small groups. It is not typically characteristic of a laboratory setting to have individual desks. Most laboratories have only limited counter space and laboratory work is often completed standing up or at a designated station in the lab. Because of this atypical classroom set up, effective teaching techniques may need to be modified for more effective student learning.

To integrate effective teaching in a laboratory setting, it might be helpful for a teacher to consider the benefits of being in laboratory versus traditional classroom setting. A possible benefit to having a laboratory as a meeting spot for class is the ability to have special equipment to do hands on experiments or perform tests that could not normally be carried out in a classroom. The classroom provides a place for reading, reviewing, and discussing literature to take place while a lab can provide a place for experiments to take place. Specifically, a sensorial physiology lab allowed students to use dissected rats and mimic past theoretical based research to learn about sensory function through the spinal
cord (Albarracin, fafan, & Felice, 2009). To make this an effective teaching technique special consideration should be made about the number of students allowed to work together and what specific materials need to be prepared by the instructor (Albarracin, fafan, & Felice, 2009). If these considerations are appropriately addressed, students will be able to learn through a kinesthetic learning activity, be provided research experience, become familiarized with basic laboratory equipment, and gain necessary laboratory skills (Albarracin, fafan, & Felice, 2009).

Laboratory instructions can be given in multiple ways, influencing the way students are able to learn. In 2000, a report by the National Research Council for National Science Education repeatedly counseled on how important it is for students to do inquiry based laboratory work versus just instructional based laboratory work. For example, laboratory worksheets that require students to use critical thinking and choose which experiments to conduct, instead of worksheets that give detailed instruction on what exactly to do and how to do it, are considered more inquiry based learning. Several recent studies have shown evidence that inquiry based learning in physiology laboratories can enhance student learning (Casotti, Rieser-Danner, & Knabb, 2008; Michael, et al., 2002; Myers & Burgess, 2003).

Enhanced student learning in a laboratory setting through inquiry based learning can be seen in a variety of ways. Some students involved in inquiry based learning can develop specific skills related to how to conduct experimental research (Casotti, Reiser-Danner, & Knabb 2008; Myer & Burgess, 2003). This may be particularly important for students who desire future research oriented careers. Other students may gain conceptual understanding of specific topics as shown to be the case of with the cardiovascular
system (Michael, Wenderoth, Modell, Cliff, Horwitz, McHale, et al., 2002). These are both specific examples of how a single teaching technique of using inquiry based laboratory instructions in exercise science laboratories can influence student learning.

Conclusion

In summary, this paper provides specific knowledge regarding effective teaching according to preferred student learning among exercise science related undergraduate students. Research indicates that over half of the undergraduate students fulfilling requirements for health related graduate programs and career plans do not favor a single mode of learning, but prefer multiple modes of learning such as aural and kinesthetic, visual and kinesthetic, and visual and read/write (Breckler, Joun, & Ngo, 2009). However, undergraduate students in this same field who are research oriented favor kinesthetics as a single mode of learning (Breckler, Joun, & Ngo, 2009). Knowing this information can help instruction planning include effective teaching techniques specific to student needs.

Along with knowing what preferred learning type makes up the majority of undergraduate health related students (e.g. exercise science students), it is important to know effective teaching tools and techniques that can be used in courses of this field of study. Teaching should involve a variety of tools and techniques used in or out of a classroom. Technology along with active learning can be incorporated as an effective teaching technique through visual demonstration (Kapitan 2008), encouraging students to review material learned in class (Gopal, Herron, Mohn, Hartsell, Jawor, & Blicknstaff, 2010), and increasing class/group discussions (Gauci, Dantas, Williams, & Kemm, 2009). Other effective teaching not involving technology that can occur in a classroom or lab setting include, explaining material through research articles (Tansey 2008; Gwirtz 2008),
role playing difficult concepts (Sturges, Maurer, and Cole 2009), and creating lab instructions that encourage inquiry based learning (Casotti, Rieser-Danner, & Knabb, 2008; Michael, Wenderoth, Modell, Cliff, Horwitz, McHale, et al., 2002, Myers & Burgess, 2003).

Teachers in exercise science related fields who use a variety of effective teaching techniques as described in this paper, give students a better chance to learn course material. This will involve using effective teaching techniques that connect with different learning styles. As a result of using effective teaching techniques, undergraduate exercise science students will have a greater opportunity to become better prepared for their future health professions.
References


This presentation introduces how to design the internship program in a particular Japanese university. In Japan, the issues of lack of business-academia collaboration were often discussed in terms of effectiveness. This presentation reports how the university and company collaborated and developed the internship program based on the instructional design method. The presentation includes how it worked and the problems that should be solved next time.

**Background**

In Japan, there are a number of universities encourage students to participate in an internship program before they start job hunting. However, Ministry of Education, Culture, Sports, Science and Technology in Japan (MEXT) states that seventy percent of universities offered internship programs in 2011 (MEXT, 2013). However, only 2.2 percent of students participated in an internship program in 2011. Furthermore, MEXT
pointed the lack of business-academia collaboration for the internship program. Thus, the effectiveness of internship programs was clear, or support from the educational aspects was not enough for the students in the internship program (MEXT, 2013).

Considering the issues, Human Innovation Research Center (HiRC) designed an internship program while closely cooperating with a company that provides an internship opportunity to the students using the instructional design method. This internship program was for a certificate program of a social community designer (SCD) at Aoyama Gakuin University. The students in the certificate program were recommended to participate in the internship program.

Designing Internship Program with Business-Academia Collaboration

Advance Preparation

First, as advance preparation, following things were discussed such as a period and timing of an internship program, and content in the early stage. Furthermore, program conditions were determined such as travel expenses and remuneration. Moreover, contracts for confidentiality such as nondisclosure agreement or internship insurance were discussed when and how the participants obtained. Necessary educational support for students during the program was advised by the professors and instructional designers at the university. In this stage, as an internship guideline suggests (Aoyama Gakuin University, 2013), not only the Human resource professionals, but also the persons in charge of the department that gives internship training communicated with person in the university. Thus, the content of the internship program or educational support were directly discussed to design effective program. The internship program was designed and implemented as a schedule listed in the table 1.

<table>
<thead>
<tr>
<th>Table 1 Schedule</th>
</tr>
</thead>
<tbody>
<tr>
<td>Months</td>
</tr>
<tr>
<td>February</td>
</tr>
<tr>
<td>March~April</td>
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<tr>
<td></td>
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<tr>
<td>Late April</td>
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<tr>
<td>Middle May</td>
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<td>Middle-End May</td>
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<tr>
<td>End of May</td>
</tr>
<tr>
<td>Early June</td>
</tr>
<tr>
<td>June-July</td>
</tr>
</tbody>
</table>
August | Implementation of internship program
August-September | Evaluation
September- | Feedback
November | Find the issues this year and identify improvement points

Actual schedule and conditions were shown in table 2. The timing was considered for student summer vacation season and the host company’s busyness of the work,

<table>
<thead>
<tr>
<th>Table 2 Dates and Conditions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Interview</strong></td>
</tr>
<tr>
<td><strong>Pre-training</strong></td>
</tr>
<tr>
<td><strong>Period of Internship Program</strong></td>
</tr>
<tr>
<td><strong>Post-Training</strong></td>
</tr>
<tr>
<td><strong>Credits</strong></td>
</tr>
<tr>
<td><strong>Travel expenses and remuneration</strong></td>
</tr>
<tr>
<td><strong>Insurance</strong></td>
</tr>
<tr>
<td><strong>Nondisclosure agreement</strong></td>
</tr>
<tr>
<td><strong>Participants</strong></td>
</tr>
</tbody>
</table>

**Designing Internship Program Based on the Instructional Design Method**

In order to design the internship program, an instructional designer analyzed the participants’ basic skills and knowledge that probably have obtained by the internship program. An instructional designer at the university used a competency list to show their levels clearly. The information shared with the host company that offered the internship program. Moreover, the participants’ course papers for the assignments in the e-portfolios made the people in the host company available based on the student’s agreements. Referring to their competency list, the appropriate learning goals were created by the instructional designer at the university. At the same time, related competency items were assigned each task of the internship program. Basic ideas of each task were suggested by the host company. Moreover, learning goals of each task
were shared with the company, students, and university during the internship program.

Next, the necessary materials such as daily report sheets, evaluation sheets, questionnaires were developed by the university to be able to provide effective educational support during the internship program.

During the internship program, the instructional designer at the university suggested the persons in the company how to give the students feedback or evaluate students with the evaluation sheets.

Four kinds of evaluation forms were prepared. Evaluation for students’ work based on the competency list was made by the host company, students’ evaluation about the internship program, and self-evaluation about their learning through the internship program, and evaluation about the final paper.

Figure 1 showed the image of the Business-Academia Collaboration.

**Data collection**

Although several data were collected, this paper focused on the student and the host company’s comments. On the last day of the internship, the participants answered the questionnaire about the internship program and their experiences. Also, the interview results of the manager at the company that offered the internship program were used to find out how the internship program worked.
**Student Comments**

<table>
<thead>
<tr>
<th>Questions</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Do you think that the level of work was appropriate as compared to the</td>
<td>Four out of five people stated the level of the work was appropriate level. One person described what was assigned was a higher than the competency.</td>
</tr>
<tr>
<td>competency? Please explain the reason for thinking so.</td>
<td></td>
</tr>
<tr>
<td>What did you discover during the internship? (About the company, about</td>
<td>Student A: I discovered that other participants have high motivation about this internship program. I was stimulated by other's ideas.</td>
</tr>
<tr>
<td>myself, students of the other, the work environment, etc.)</td>
<td>Student B: I felt a difference in the way of thinking. I was moved the story from the manager. During the college life, it is possible to choose the road, but when you start to work, you need to make your way and become a member of society.</td>
</tr>
<tr>
<td></td>
<td>Student C: I found that in the student life, you can work for the thing that could reach the end, but I realized that I need to continuously work for a project because there is no answer or the correct answer in the company.</td>
</tr>
<tr>
<td>Write good points of the internship.</td>
<td>Student A: We were able to have an experience of the actual work.</td>
</tr>
<tr>
<td></td>
<td>Student B: Talking to the people in the company was very meaningful. I was able to receive the feedback about my ideas, thus I was able to have a new perspective that I would not be able to have in school.</td>
</tr>
<tr>
<td></td>
<td>Student C: The work of the internship was such fun. In addition, I found the skills I need in the future in the work. It was meaningful to have new perspective that would not be able to have as students.</td>
</tr>
<tr>
<td></td>
<td>Student D: The internship program allowed the students the appropriate experience that was able to only experience in the workplace. It was good to participate in this program.</td>
</tr>
<tr>
<td></td>
<td>Student E: It is good to have lunch with the people in the company while talking about many things.</td>
</tr>
</tbody>
</table>
Comments of the Manager in Host Company

| Good Points | Evaluation indicators and learning objectives that university provided us with was very helpful. From the competency list, level of students was easily image. It helped us to plan the student course assignment. Because there is no familiar to evaluate, we did not know well how may be evaluated. |
| Points consider next year | Evaluation of students needed more support from the university. If the level of students’ skill were different, it may be difficult in designing the program. To do practical training, it would be necessary to have over 3 days. I think there was a deeper learning you may not be able to find from the only daily report. The number of people (5 students) was just right. I think it's impossible have more than 10 students. Load of the host company was still high, but there may be a way to implement lower load. |

Findings
This internship program was designed by the university and enterprise. Both of them shared the information and helped each other, and tried to design the effective program for the students.

From the student comments, the level of internship work seemed to be appropriate. Competency list made by the university helped the people in the company to imagine the student level. Thus, it helped them to design the tasks and program.

Students seemed to be able to have a significant working experience, so that they found a new insight into working in a company. Taking with people in the company or feedback from them seemed to be helpful.

While, since the people in the host company were not familiar to the educational support to the students and evaluation of students, the advice or support from the university was helpful to them. However, as the manager’s comment, the university should have helped more support for the evaluation.

Even though the university supported the host company, load of the host company was high. It may be necessary to design that takes into account the efficiency of the corporate side while maintain the effectiveness of the internship program.

Although this paper used the limited data with the small sample, some hint may indicate how to collaborate business-academia to design the effective internship program.

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Human Innovation Research Center(HiRC) Aoyama Gakuin University (2013). “Strategic Promotion of core business professional human resources development in growth areas”
Acknowledgment

This work has been supported by Grant-in-Aid for Exploratory Research 26560128 of the Ministry of Education, Science, Sports and Culture (MEXT) from 2014 to 2015. We are grateful for their support.
1. Title of the submission.
   Investigating L2 learners' polysemous word knowledge and English proficiency

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6. Abstract.
   It is often argued that there are two aspects of vocabulary knowledge: the breadth and depth of word knowledge. However, this metaphor has not been explored empirically enough. We still do not know whether the knowledge of words with multiple meanings should be categorized as width or depth of vocabulary knowledge. This two-pronged study investigated learners’ knowledge of high frequency polysemous words. Two sets of 50 target words with multiple meanings (nouns, verbs, and adjectives) were carefully chosen from the most frequent 3000
words of the JACET 8000 word list. The first task asked learners to choose the incorrect definition for each target word from the four L1 definitions given. This task tested whether the learners knew the three correct meanings of the target words. The second task asked learners to choose the primary and secondary meanings of the target words in L1. This task was focused on testing if learners knew more than one meaning of the target words. The scores were compared with learners’ vocabulary size test scores and TOEIC scores they had already taken. The results showed that (1) the higher proficiency group did not necessarily get significantly higher scores in the first task, and (2) the primary meaning had a higher correlation with their TOEIC scores than the secondary meaning. These results showed that whether learners knew the primary meaning or not was the most important factor of their English proficiency. This finding explains why the bilingual vocabulary size test developed in Japan can be used for estimating learners’ English proficiency. As far as this result is concerned, knowledge of polysemous words can be considered as the width of vocabulary knowledge.
A Scientific Poster is not a Scientific Article!

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Abstract

Over the years, poster presentations at scientific conferences have achieved the status of oral presentations. A conference may have hundreds or thousands of posters displayed in various sessions. However, after having gone to scientific conferences for 34 years, we realize there is still a misconception that a poster is simply a large piece of paper with a scientific article on it. It is not! A poster is an entirely different mode of disseminating scientific information. Its obvious goal is to present research findings. Yet, visualize a poster as an advertisement, which strives to catch the eye of the viewer. It must have eye appeal. It needs to be well designed and attractive because a poster must first grab the attention of passersby within two seconds. It needs to hold their attention for a few more seconds while they browse through the poster to determine if they even want to read it. Finally, the poster holds the viewers' attention for a few minutes while they look at it in more detail and start talking to the presenter. During a poster session, presenters typically stand by their posters for only a short period compared to the length of the conference. Thus, people view a poster when the presenter is not there so it needs to entice viewers on its own merit. How can a poster do this? A poster's appeal is through visuals and graphics (photographs, illustrations, graphs, and figures). Text is of secondary importance. Putting what looks like a scientific article (with its small font size, lots of text, small figures and tables) will put off viewers. In conclusion, designing a poster to achieve its goal, in addition to its content, requires thorough planning and analysis about audience psychology, human nature, and visual perception.

Additional index words. scientific conferences, scientific meetings, visual perception, audience psychology
Introduction

Poster presentations at scientific conferences have achieved equal status as oral presentations. For the same reason, careful planning and designing of posters are needed to ensure that they achieve their goal. The goal of a scientific poster is to present research findings clearly and concisely. However, after observing posters at many scientific conferences over the years, we realize there still remains a misconception of the purpose of a poster.

Campbell (2004) stated that a poster is a mini-manuscript. But, a poster is not a scientific manuscript (Mitrany, 2005). The problem with too many posters is that they look as if the authors merely cut and pasted a scientific article onto the poster paper. Too much information is presented (Hamilton, 2008). Excessive text results in the font size being too small. Too many small graphics are crowded onto the poster. Beamish et al. (2014) found that 24-28% of posters were characterized as difficult to read. Because a poster is a reflection upon the presenter and their department and university, poster quality is as important as the message being conveyed (Ellerbee, 2006).

Compared to a scientific article, a scientific poster is an entirely different means of disseminating scientific information. Visualize a poster as an advertisement, which strives to catch the eye of the viewer. It must have eye appeal! It needs to be attractive and well designed because a poster must first quickly grab the attention of passersby. You have about three seconds to catch the audience's attention (Van Dalen et al., 2002). Driskill (2010) reported that most engineers decide in less than five seconds whether to stop and read a poster. The poster must hold the viewers' attention while they skim the poster to determine if they want to read it. And finally, the poster has to sustain the viewers' attention while they look at it in more detail and start talking to the presenter.

During a poster session, presenters typically stand by their posters for only a short period compared to the length of the entire conference (Campbell, 2004). For example, at an American Society for Horticultural Science (ASHS) conference, presenters stand by their poster for only 45 minutes during the four-day conference. People will view a poster when the presenter is not there, emphasizing that the poster must be self-explanatory with little guidance needed on the part of the presenter (Day and Gastel, 2011). It should attract and inform viewers on its own merit. A poster's appeal is through visuals and graphics (photographs, illustrations, graphs, and tables) with text being of secondary importance. Putting what looks like a scientific article (with its small font size, lots of text, and small figures and tables) on a poster will discourage viewers from giving such a poster a second glance. Driskill (2010) indicated that a text-heavy design puts off readers. When faced with many posters, it is natural for people to be drawn to the most eye-catching posters (Larive and Bulska, 2006). Bell et al. (2006) pointed out that conference participants want to see the posters easily and clearly. Hence, the objective of this presentation is to analyze the features of a good scientific poster and why it is not a scientific article.
A Scientific Poster vs. a Scientific Article

A scientific poster is one of the two main formats used to present a paper at a scientific conference (Figure 1). The other is a scientific talk. The purpose of the poster is to present clearly and understandably the results of a scientific study in a format of graphics and text. We are all familiar with science fair posters that we have seen and done in grade school through high school. A scientific poster is more elaborate and detailed (Figure 2). Paper posters are a certain size specified by the organizing society of the scientific conference. Posters at ASHS conferences are limited to 47 inches x 47 inches. At the Hawaii International Conference on Education, posters need to fit on a 48 inches x 36 inches tri-fold display board.

The scientific poster is a preview of, hopefully, a scientific article to come. It presents the latest research results before the results appear in a scientific article. A poster provides only highlights of a study and does not present the study in considerable detail such as in a scientific article. Information is primarily graphical with the presenter being there to provide additional information and discussion. The scientific article stands alone with no authors present. Therefore, if further information is needed, the reader has to contact the authors.

A poster session lasts for a specific amount of time, for instance, 45 minutes at ASHS conferences or 90 minutes at the Hawaii International Conference on Education. A presenter stands by their poster and discusses it with interested conference attendees. Typically, posters are set up in a large room such as a ballroom at a hotel or a convention center (Campbell, 2004). A poster is meant to be viewed quickly (for just a few minutes) before the viewer moves on to the next poster. It is viewed when the presenter is there or absent. As a consequence, posters must be able stand alone without having a presenter there to explain it (Larive and Bulska, 2006).

Posters must be eye-catching and striking (Figure 3). Its components need to be large enough to be read at a distance, especially when the viewer is part of a group. Information is presented in an easily read format, that is, with lots of graphics and few words (Day and Gastel, 2011). Ellerbee (2006) emphasized that by achieving a balance between visual and textual elements, you can draw people to your poster. In a ballroom, there may be several hundred to over a thousand posters on view. As a result, a poster must compete with the other posters in drawing the attention of the conference attendees.

In contrast, a scientific article is read at leisure by the reader. This difference in time is critical and enables an article to have much more details, text, and graphics. Both the text and graphics can be small. There is no time constraint in reading an article as there is in viewing a poster. The reader has time to read the text thoroughly and study the tables and graphs in detail.

Understanding the Audience at Conferences

The audiences are different for a scientific poster and a scientific article. The article is generally read by people who are doing the same or similar research as the authors. The poster is displayed not only for viewers who are doing similar research, but also for the general audience attending the conference. This includes people who are not familiar with the research being presented in
the poster. Accordingly, authors need to tailor their poster for these viewers, too (Figure 4). After all, people who are doing similar research as the authors will view a poster whether it is good or poor.

One way to "measure" the impact of a poster is to divide the cost of attending the conference (conference registration, airfare, hotel, airport shuttle, per diem, and parking) by the number of people who look at the poster and talk to the presenter. This can serve as a rough indication of the interest, appeal, and impact of the poster. We are striving to get the most "bang for the buck" because attending a conference can be costly, often $2,000-$2,500 or more. Since the poster may be displayed while the presenter is not standing by it, a manila folder with color laser copies of the poster can be posted on the poster display board (Figure 3) (Campbell, 2004). By counting how many of these color laser copies are taken by conference participants, one can get an estimate of the interest and impact of the poster.

**Visual Appeal**

The weaknesses of a scientific article type poster include too much information and too much text. Mitrany (2005) found that the most common mistake of authors of poor posters is trying to communicate too much. To put all this text on the poster results in the font being too small to be read at a distance. Too much text also means the viewer has difficulty skimming the poster in just a few minutes before moving on. Driskill (2010) reported that an analysis of 154 posters presented at an American Institute of Chemical Engineers Annual Meeting found that only 20% of the posters had an optimal design. A common problem was poor legibility resulting from too much text, small font sizes, and poor use of color. Too much text is psychologically a turn off to the viewers.

Visuals such as graphs, tables, illustrations, and photographs are typically too small. They are difficult to see at a distance. In addition, too much information is presented in these visuals. Remember, the graphics of a poster need to be simple because they are skimmed and not studied in detail as with a scientific article.

**Design Considerations of Scientific Posters**

Above all, scientific posters are meant to be skimmed, not read in detail. Van Dalen et al. (2002) emphasized that a poster should be understood at a glance. As such, information must be presented in a way that enhances this. A poster has to compete with many other posters at the same time. The test of a good poster is whether the material can be absorbed within two minutes (Whimster, 1989).

Besides obviously having good content, a poster must be appealing and attention-grabbing. It is like the stores in a shopping center. They are all competing for the shoppers' attention as they walk by. Hardicre et al. (2007) explained that posters are a visual display and should entice the audience to move in closer, rather like a window display. Similarly, a poster is competing for the viewers' attention as they walk by. The overall impression of the poster needs to hold the
viewer's attention long enough for the viewer to decide to read the poster. The best posters help viewers decide quickly whether to stay and read the poster (Driskill, 2010).

Various styles, layouts, and graphics have made their way onto the scenes of scientific conferences. There is some room for artistic creativity when creating posters. Authors should employ their artistic talents, which give their posters a unique identity, in order for their posters to be noticed. Additionally, the use of color combinations can attract or deter viewers from viewing it. Using high contrast color combinations can attract the attention of passersby from near and far (Figure 5).

Lots of graphics and less text contribute to viewers deciding to read a poster. Use graphs instead of tables, if possible (Whimster, 1989). Use big graphics and fonts. The idea is to make the viewer's job easier (Mitrany, 2005). This helps to attract and hold the attention of the viewer. It helps foster understanding of the poster's content by the viewer. The organization and layout should help the viewer glance at, skim, and get the main points of the poster easily and quickly. Good navigation is critical so as not to disorient and confuse the viewer (Figure 6). The poster should clearly indicate the path that the viewer's eyes should follow (Driskill, 2010). The information you use and the style in which you use it in a poster can make or break a message (Briggs, 2009).

Posters are looked at left to right and top to bottom. The authors need to construct the poster to help the eye flow of the viewers and enhance easy navigation through the poster (Figure 4) (Van Dalen et al., 2002). If the organization and layout are poor, it will be difficult for the viewer to navigate through the poster (Figure 6). There should be an obvious sequence to follow (Whimster, 1989).

Posters should have the title, authors, affiliations, introduction, materials and methods, results, conclusions, and acknowledgements sections (Figure 2). Beamish et al. (2014) reported that 81-93% of posters were formatted using aims, methods, results, and conclusions sections. The discussion section can be omitted since the presenter will handle this. Hamilton (2008) suggested omitting the abstract, discussion, and reference sections, with which we agree. Additional information can be omitted from the poster and included in handouts that are attached to the poster board or linked through QR (quick response) codes on the poster (Figure 3) (Whimster, 1989). Beamish et al. (2014) found that 19-82% of posters included references on the posters. We feel references should be left off the poster and included in a handout. Also, do not include the abstract on the poster (Mitrany, 2005). Abstracts can be handled with a handout if the abstracts are not already included in the technical program (printed, flash drive, or online). Space on a poster is too valuable to be taken up by items best handled with handouts.

Conclusions

In conclusion, designing a scientific poster to achieve its goal requires precise planning and the analysis of audience psychology and visual perception to ensure it is not a scientific article. Putting a poster together is both a science and an art, much like creating a scientific article.
However, the difference in creating a poster lies in visual appearance, cleanliness, readability, and its appeal to many passersby. Simply put, a scientific poster is not a scientific article!

Acknowledgements

We thank Wayne Toma and Matthew Chun-Hori, College of Tropical Agriculture and Human Resources, University of Hawaii at Manoa, for printing the posters. We are grateful to Joyce Gooman, Lamination House, Inc., for laminating the posters.
Literature Cited


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**Figure 1.** Example of the organization and layout of a good scientific poster. From: Hardicre et al., 2007. Discussion and References sections may be omitted.

**Figure 2.** Detailed organization and layout of a good scientific poster. From: Hamilton, 2008. Abstract may be omitted.
Figure 3. Our poster displayed at the 2014 Annual Conference of the American Society for Horticultural Science in Orlando, FL. Poster is 42 inches wide by 36 inches tall. Manila envelope held color laser copies of the poster. The QR (quick response) code in the upper left linked to the poster abstract.
Figure 4. Our poster for the 2013 Hawaii International Conference on Education in Honolulu, HI. Poster is 42 inches wide by 36 inches tall. Numbered headings aid the viewer's eye flow.

Figure 5. Our poster displayed at the 2013 Annual Conference of the American Society for Horticultural Science in Palm Desert, CA. Visually appealing colors and large, high resolution photos were used to attract viewers from afar.
**Figure 6.** Example of the organization and layout of a poor scientific poster. From: Kaimal and Thappa, 2010. Authors, Affiliations, and Acknowledgements sections are missing. Discussion section may be omitted. Poor organization and layout hinder the viewer's eye flow.
Teaching English to Boundary Crossers
-A Subject in Change

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Abstract

Swedish students learn English in school from about the age of nine. However, they encounter English long before that out of school when listening to music, watching television or video clips or playing digital games. Such exposure to English outside school can be assumed to have a bearing on their learning of English in school. Teachers have to handle the fact that their students acquire knowledge of English well beyond the classroom. Keeping this in mind, it is of interest to describe and understand the relationships between learning English in and out of school, especially considering the increase in availability of media technologies in schools.

The aim of this study is to investigate how teachers say that they organize their teaching of English, especially considering the intersection of school and out-of-school practices. The data consists of interviews with 13 class teachers who teach English to ten to twelve-year-olds. The concept of boundary crossing is used as an analytic tool. The results are presented in terms of two dimensions of reasoning; 1) Pedagogical Design and Content and 2) Pedagogical Resources. Results on whether the teachers regard English as a foreign or second language are also reported.

Key words: TESL, boundary crossing, out-of-school learning, ICT

Introduction

Students in Sweden learn English in school from about the age of nine. However, they encounter English long before that in other contexts, for example when they listen to music, watch television or video clips or play digital games. For example, 75% of 15-24-year-olds watch TV, 74% use the Internet to listen to music (NORDICOM 2012) and 80% of 9–12-year-olds play digital games in their spare-time (Swedish Media Council 2010). In fact, as English is so ubiquitous in Sweden and the rest of the Nordic countries, there is a discussion of whether it is to be considered a foreign language (FL) or indeed a second language (L2) (e.g. Phillipson 1992; Taavitsainen & Pahta 2004; Cabau-Lampa 2005) if one is to consider
that a foreign language is usually referred to as a language not spoken in the learner’s immediate environment whereas a second language is (Bhaskaran Nayar 1997).

Reports on Swedish teenagers’ activities involving English outside school point to 18-24 hours per week (Sundqvist 2009; Olsson 2011), whereas a report on 10-11-year-olds’ involvement in such activities points to between 5 and 11.5 hours per week (Sundqvist & Sylvén 2014). Such exposure to English outside school can be assumed to have a bearing on their learning of English in school. Participation in virtual environments and internet interest groups provide opportunities for L2 use and learning (Thorne, Black & Sykes 2009) and students’ results on vocabulary tests in school have been reported to correlate with the amount of time spent on playing digital games at home (Sylvén & Sundqvist 2012). Teachers have to handle the fact that their students acquire knowledge of English well beyond the classroom. Keeping this in mind, it is of interest to describe and understand the relationships between learning English in and out of school, especially considering the increase in availability of media technologies in schools. When media and information and communication technology (ICT) are used in the classroom, it seems, not only does the content change from being textbook-based to being closer to the students’ interests, who defines what that content is also changes, thus implying a shift in power (Erixon, 2010).

In a former study by Bunting & Lindström (2013), interviews were made with 47 eleven-year-olds. That study aimed to describe how students say that they learn English in and out of school and how their learning in school relates to their learning out of school. The results showed that the students perceived what they did with English in school as something separate from what they did with English out of school. Similar results, that students mark a clear boundary between what school is and what it is not, have also been reported elsewhere (Lantz-Andersson, Vígmo & Bowen 2012). According to Akkerman and Bakker (2011, p. 133), “[a] boundary can be seen as a socio-cultural difference leading to discontinuity in action or interaction”. Although there is a discontinuity, the boundary at the same time indicates that there is something related or linked on the different sides of it. For example, reading a text in English in school and listening to a song in English out of school both concerns using, and possibly learning, English. Similarly, boundary crossing refers to interactions between contexts and these can be aided by boundary objects which can establish continuity across boundaries (ibid.) In Bunting & Lindström (2013), the boundary that becomes visible is drawn up from location as well as dimensions of acceptability and intention. Although the students make distinctions between the two sides of the boundary, between formal and informal learning environments, they cross and negotiate that same boundary every day. It is at this intersection of school and out-of-school practices that questions are raised concerning what environments and resources are interesting for language learning.

Taking the earlier study by Bunting & Lindström (2013) as a starting point, the aim of this study is to investigate how teachers say that they organize their teaching of English,
especially considering the intersection of school and out-of-school practices. To aid this
deavor, the following questions will be considered:

- What do the teachers consider to be a competent language user, and taking that into
  consideration, what do they say about how they teach English?

- Do the teachers consider English to be a foreign language (FL) or a second language
  (L2)? Furthermore, can their answers be linked to their use of pedagogical design and
  content?

The text that follows will be an account of the teachers’ reasoning around the first question
and a subsequent analysis including the second question.

The Study

This study contains the first analysis and results from an interview material. It is thus
empirical, descriptive and explorative to its character.

The principals of 24 schools in an area encompassed within a radius of 20 kilometers in
western Sweden were contacted by e-mail and telephone about participation in the study.
Nine answered affirmatively and three negatively, the rest did not reply. Some of the
principals provided names of specific teachers to contact, whereas some said to go ahead and
contact the teachers directly. The 13 teachers who were contacted agreed to participate. The
schools at which the teachers in the study work are both rural and urban, located in varying
socio-economic areas and their sizes vary from approximately 200 to 750 students. The large
variation in size is largely due to the fact that some are K-6 and some K-9 schools.

The participating teachers in this study are class teachers which means that they teach most
subjects to the students, and they have all taught English in the years 4-6 in Swedish
comprehensive school. This entails teaching students that are between ten and twelve years
old and who have had some English in school since year 2 or 3. The interviewed teachers
were all women, between 32 and 59 years of age and had worked as teachers for 1.5- 27
years. At the time of the interviews, one teacher worked in an independent school, one with a
special needs class and one with a preparatory class for children who have recently arrived in
Sweden.

The interviews were conducted from December 2013 to June 2014. They were done in
settings chosen by the interviewees and which meant that they were done at their workplace
with the exception of one which was done at the interviewer’s workplace. The audio-recorded
interviews were individual, conducted in Swedish and lasted between 37 and 83 minutes.
Additional telephone interviews were done with the five first interviewees as one question
arose around mid-way in the interviewing period. All interviews were transcribed verbatim
and the excerpts chosen for this paper were translated into English. All interviewees were re-
named.
The questions in the interviews were arranged in clusters around a specific topic in order to encourage reasoning. To discover how the teachers say they organize their teaching in order for the students to become competent language users, the material was considered in its entirety.

The analysis of the material was based on the teachers’ reasoning in answering the interview questions. In an iterative procedure, the transcriptions were read many times in their entirety in collaboration with a senior researcher and as recurring answers and descriptions were identified, subsequent patterns emerged.

Results

According to the teachers’ responses, to be a competent language user encompasses a variety of descriptions. One teacher only mentions listening comprehension while another offers a more extensive reply:

Excerpt 1

For me it means understanding texts that I read and listen to well, and that I can communicate both orally and in writing, so that the receiver understands what I want to say. (Beatrice)

The teacher provides both a comprehensive and detailed explanation and parts of what she is saying is also expressed by other teachers. They also emphasize aspects such as the English language having a social dimension; daring to speak English; that speaking comes first and then the writing. The same demands are made on English as on Swedish, for example to be able to choose the right genre. Other aspects are to be able to express oneself orally to advance and learn more; finding new ways of making oneself understood; circumvent problems. To be able to express oneself spontaneously; wanting to communicate something. Also, it is possible to be quite knowledgeable, but if you cannot communicate it to anyone, you do not have any competence, something which is illustrated in the following excerpt:

Excerpt 2

You can sit and study and know lots and lots, but if you don’t use it you won’t get anywhere and then you don’t really have any competence because it doesn’t reach anyone. (Paula)

Together the teachers’ answers lead up to a description of competent language users as people who want and dare to communicate and who understand the language and spontaneously can make themselves understood.
**Pedagogical design and content**

What takes place in school cannot be seen as detached from the rest of society, something which is expressed as follows:

*Excerpt 3*

> Everything happens outside school, all contact with English, I think. Music, the computer, TV and everything they encounter and I think their vocabulary is different to what it was like 10 years ago. […] They learn more words and they learn expressions in a different way too. I try to use what they already know so it doesn’t get too basic and boring in school so we can do pop music and look at lyrics and stuff. […] They use words we didn’t teach 10 years ago, if you look at a textbook. […] They know a bit more, they know more difficult words for example and they understand much more than they did 10 years ago. (Alexandra)

She describes changes and conditions in relation to the surrounding world which have an impact on both teaching and learning. In this context it can be interesting to know that 12 out of 13 interviewed teachers consider English to be a second language (L2) rather than a foreign language (FL) in Sweden. They motivate this reasoning with English being ever present in Swedish society.

Societal demands on school to turn students into competent language users include that many parts of the English language should be dealt with in order for the students to gain sufficient competence. This is, for example, manifested in the national tests where various subtests have different foci. This can result in a pedagogical dilemma as the analysis of the interviews reveal that the teachers want to work with wholes and *contextualized learning*.

**Contextualized learning**

The teachers often emphasize contextualized language use and learning by contrasting it against fragmented and decontextualized language learning. It also becomes apparent that the ambition to create contexts is used in different ways, partly to spark or maintain the students’ interest, partly by using themes and contexts related to their interests.

Pointing to the students having greater knowledge of English today than earlier, Alice says that ”you begin with texts earlier and learning a whole and not just loose words”. She talks about contextualized learning and contrasts it to learning words without context. Another teacher expresses herself in a similar way:
Excerpt 4

So for me checking homework can be retelling as much as you can remember from the texts because then you use the words [...] doing vocabulary quizzes every week is a very good way of killing the interest for a language. (Amelia)

She contrasts contextualized learning against learning decontextualized vocabulary, as it is not part of a greater whole, something which she finds devastating. She emphasizes the value of using vocabulary in context.

The teachers often say that they work with themes which can be understood as an attempt to contextualize the communication. One says that:

Excerpt 5

I often work thematically [...] House and garden for example and then we find words for that and find texts about that and find games on the net about it and songs about it and- there is lots of fun stuff. (Alice)

Another way to contextualize is to take the students’ interests as a starting point. When the students want to share something they also dare to use the language which is expressed as follows:

Excerpt 6

There’s been a lot of One Direction lately then there’s been Justin Bieber and, what girls have we had? I don’t know much about this, but it’s great to sit and listen to them because we have many presentations and they get to speak about what they enjoy talking about. Not just speak about an English speaking country. That they get to choose the topic themselves. (Paula)

The teacher says that she does not know that much about the music the students listen to, but she has had the opportunity to learn since the students bring music from home. The teacher here points to the importance of wanting to share and daring to use the language.

Another teacher expresses herself in a similar manner:

Excerpt 7

How do they learn best? What do they enjoy? Well, if it’s tinkering with the car and build engines then maybe you can find a clip on YouTube together or you can find a clip on some American site where they look at engine parts and explain how you do it but they do it in English. So that it’s interesting for the student. (Amanda)
Context can also be achieved from changes brought about from the surrounding world. Newcomers\(^1\) can act as agents of change and help create new learning environments. Three teachers explicitly express advantages with having newcomers in the classroom. One of them says:

Excerpt 8

I had quite a few newcomers. […] I had to do everything in English with them since they knew so little Swedish. […] And the others in the class thought that was really good that they spoke English because they could practise their English during breaks. They were really happy about it, actually, and felt that they developed their English. (Helen)

The teacher had to do all teaching in English, so the students learnt both by listening to the teacher and by speaking to their classmates from abroad during breaks. By using English as their common language throughout the school day, a meaningful context was created; the clear purpose of speaking English was for everybody to understand each other.

In sum, the analysis shows that the teachers use different strategies in order to achieve contextualized learning. They utilize the students’ interests to provide context, but they also create opportunities for the students to become interested by demonstrating context. Furthermore, at times they face situations where the only solution is to change the language environment.

Pedagogical resources

The teachers preference to work with contextualized learning becomes apparent in their reasoning about choice of pedagogical resources. Two categories of pedagogical resources appear in the data. The first is material teaching resources whereas the other is social resources.

Material teaching resources

In the interviews with the teachers, it is clear that they make a distinction between the teaching resources that primarily are intended for school purposes and those that are intended for public purposes.

\(^1\) A direct translation of the Swedish ‘nyanlända’, denoting people who have recently arrived in Sweden, often refugees.
For school purposes

Resources mentioned by the teachers are: textbooks, workbooks, web-based school materials, school films, materials produced in the classroom (songs, films, presentations), boardgames and digital games, handpuppets and smartboards.

Since the variation of the materials the teachers say they use is so big, I choose to illustrate what they say about the textbook as it is something which is mentioned by everybody. The answers vary from those who say that they just about have stopped using it to those that find it useful for structural purposes or its texts:

*Excerpt 9*

I’ve let the textbook go in the past 2 years. In year 4 I keep it quite a bit to get them into a routine. Otherwise I use the texts. Today we’ll work with this text and then we’ll look at verbs in past tense because that’s very good in this particular text, for example. (Beatrice)

All the teachers are familiar with the textbook as the main teaching material, not least from their own school days. Lately, there is competition from the smartboard in particular. It is present in many classrooms and several of the teachers mention it. Some use it frequently and one specifically points to its advantages when working with students with concentration difficulties whereas some do not know how to use it. As Catherine says: ”And we’ve just got smartboards too. I have no idea how to work them into the language lessons!”

These pedagogical resources primarily belong in school and are rarely or never used by the students outside school.

For public purposes

The teaching materials the teachers talk about and which primarily are intended for public purposes are: films, songs, novels, YouTube, Google, commercial digital games, pod casts, Skype, google docs, blogs, chat fora, computers and iPads.

According to the teachers’ replies, the use of the resources vary. Sometimes they are used on the teachers’ initiative and in other cases on the students’. Sometimes they originate in school to then follow the student home and sometimes the students find something at home that they bring to class.

Several teachers say that they work with lyrics that they find on, for example, YouTube. Alexandra explains that ”[y]ou go and look at the lyrics, what they really sing about. […] We use YouTube a lot as well and many even have subtitles”.

New knowledge originating in commercial digital games also finds its way into the school. This becomes apparent when students make presentations about games that interest them or
ask about words they have not understood in a game or use new words in unorthodox ways, for example:

*Excerpt 10*

They play video games and then they learn how it works and the words and they find out. They often come to me and ask ‘what does this word mean?’ and that can be a gaming word. […] We have looked at their games and brought up words that we have translated and explained. (Charlotte)

The material teaching resources for public purposes are resources that ignore boundaries.

*Social resources*

The second category of pedagogical resources is made up of students as learning resources. The teachers mention travelling, oral presentations, communication with schools abroad, contact with foreign teacher training students and newcomers in the classroom.

One example is illustrated in Excerpt 6, where both the teacher and the students learn from the student presentations. When the students make presentations, they become resources for the other students’ learning as they are subjected to a presentation in English during which they can practise listening comprehension. As an added bonus, the teacher learns something about contemporary music.

One teacher describes a project with a school in another country that they had contact with both via Skype and in person:

*Excerpt 11*

It started with a very short ‘Hello my name is…’ to them actually having contact via Skype. They did that privately outside school, and then the foreign students came here and stayed for 5 days, lived with the students, and that was fantastic! It was a real boost. […] When it got closer to actually meeting them and the students came to school one day and said ‘I skyped with one of them yesterday.’ ‘Did you?’ And when they start to have that kind of contact, you know on the phone and facebook and all the stuff they did then- it’s unbeatable really. […] They got the contact from me, but then they continued to build on it. (Julia)

Another teacher says that she has had English-speaking teacher training exchange students on practice in the class. They had been there during several lessons, something she expressed as a positive experience for the students.
Last, but not least, there are the newcomers that are referred to in Excerpt 8. As English is the only common language among the students when there are newcomers in the class, the context they create together in which they use English becomes authentic.

In sum, the analysis of the pedagogical resources show that the teachers use materials of varying kinds. They use materials which belongs in school as well as materials that can be used for purposes other than instruction. Additionally, resources that to a large extent are based on social situations are used and these can also be used both in school and out of school.

**Discussion**

The teachers in the interviews were asked what they consider to be a competent language user and their answers resulted in the following description: people who want and dare to communicate and who understand the language and spontaneously can make themselves understood. An analysis of the entire material revealed how the teachers say they organize their teaching in order for the students to become competent language users, what their pedagogical design and content is and what pedagogical resources they use.

The teachers’ responses indicate that they favour working with contextualized learning. They use the students’ interests to provide them with contexts, thereby creating opportunities for the students to become interested in learning English. This can be linked to students being used to learn for example vocabulary in context when they encounter English out of school and that the teachers want to tap into something that obviously works. If students learn from watching YouTube clips at home, this may also work in school (Excerpt 7). It can also be linked to the teachers’ wish to use the students’ interests for learning purposes. If a student has a particular interest (Excerpt 6) this can be turned into a learning opportunity for the whole class. These results resonate with Erixon’s (2010) findings, that when media and ICT are used in the classroom the students define the content to a larger extent and it tends to be closer to the students’ own interests. The shift in power this change brings forth can clearly be seen when teachers concede to the students knowing more than them about certain topics (Excerpt 6).

A shift in power can also be related to the pedagogical resources the teachers use. All the teachers in the present study use media and ICT when teaching English, albeit to varying degrees. Some profess to use the textbook to a lesser degree now than before (Excerpt 9) and all of them, to varying extents, utilize resources linked to media and ICT instead of the textbook or as a complement to it. This is in accordance with Erixon’s (2010) findings of the textbook being used less where media and ICT is used. When the teachers mention the various material teaching resources they use in the classroom, they mention those that are intended for school purposes and where both traditional teaching materials such as textbooks and more recent introductions such as smartboards are included. However, among the
materials that also are intended for public use, only media and ICT resources are mentioned, with the novel being the one exception.

According to the teachers, being a competent language user involves a social dimension. This reasoning manifests itself concretely in that some of them actively use the students as learning resources, social resources. Sometimes the activities are designed by the teacher, such as the oral presentations (Excerpt 6) or the student exchanges (Excerpt 11). Sometimes, however, the teachers and students face situations when the world physically enters the classroom and when the only solution is to change the language environment. In this sense newcomers can be an asset for the other students’ learning of English (Excerpt 8).

This study shows that the teachers are conscious of the students moving between different settings and cross the boundary between using and learning English in school and out of school on an almost daily basis. This was also shown in the study based on student interviews (Bunting & Lindström 2013). Boundary is here understood as primarily being a socio-cultural difference that disrupts a continuum rather than a division of locations (Akkerman & Bakker 2011). However, the sides of the boundary are linked, in this particular case because they concern using and learning English. There is thus both discontinuity and continuity at play and correlating actions and interactions go on across the boundary, implying learning that involves various parties and perspectives (ibid.) Many of the pedagogical resources that the teachers in this study say they use also cross boundaries. The materials that the teachers use in school which also can be used for public purposes constitute a link between English in school and out of school. They can thus be considered to be boundary objects as they carry meaning in different sites and are used across boundaries (cf. Akkerman & Bakker 2011). As regards the social resources in this study, they can also cross boundaries, both socio-cultural and national ones.

The predominant view among the teachers is that English is a L2 and one even said that she found the demands for being a competent language user in English to be the same as for Swedish. All of them agree that the students already know plenty when they begin with English and the teachers with more work experience claim that the students know much more today compared to as little as 10 years ago. This view is reflected in the way they say they teach. They use what their students already know instead of assuming that they have to start with decontextualized parts of the language (Excerpt 3, 4, 5), an approach which becomes possible when the students know more. The teachers do not shy away from using English as the teaching language for all subjects when newcomers enter the classroom as they think that all students will understand (Excerpt 8). However, one teacher did say that English is more of a FL than a L2, indicating that this change in status is in progress rather than completed.
Conclusion

School is a strong institution, but what goes on in society at large resonates in school. Technological developments as well as immigration politics and general globalization have an impact on both school in general and English learning and teaching in particular. As English is used increasingly in the students’ lives out of school, the teachers teaching the subject of English in school change their pedagogical design and approach to suit the students’ changing needs and thus the subject itself changes. Students today cross the boundary between using and learning English in school and out of school almost daily and teachers try to establish continuity across that boundary by using media and ICT as bridging agents. This study shows that teaching English to boundary crossers involves adapting to the students to a higher extent than before, both regarding content and resources.

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Title: The babies’ perspective: Affective attitudes to the new world

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How do adults take babies’ perspective to support their learning during the transitory cultural events such as family routines and cultural festivals in daily life? The explorations in the research site of babies’ daily life, are used to investigate this question. In this study, Vygotsky’s (1997) cultural-historical concept of perezhivanie informs the research. This paper focuses in particular on exploring how parents/adults, can take babies’ perspective, and engage them in family events through collective thinking to support their learning. Visual methodology has been applied in the research to frame the analysis of babies’ everyday experience with families. The paper analyses daily life events of three babies (from Australia, China and Mexico) to identify how adults and baby engage in shared activities to build babies’ affective attitudes to their new worlds. This paper unpacks the various dimensions of parent-baby shared daily practices and ends with a discussion of the affectiveness of babies’ interaction, in order to determine the pedagogical strategies adults may use in their everyday practices.
Teacher Beliefs and Teacher Behavior in Alternative Assessment:

Applications for Teaching Second Language

Abstract

Assessment has become a popular topic in school reform. Professionals know that alternative assessment methods have the potential to improve the complex task of student assessment and to promote a more positive attitude toward the educational process. This study investigated pre- and in-service teacher attitudes towards assessment, especially portfolios, using data from students enrolled in a master's second language assessment course. The researchers used surveys and interviews to understand portfolios. The results suggest that participants understand the usefulness of portfolio assessment and the interaction between instruction and assessment. Their attitudes toward alternative assessment were positive overall; however, they reveal that lack of preparation in using portfolios creates challenges in practice.

Introduction

In conjunction with the current school reform effort, assessment has become a popular topic. Many professionals today are becoming more aware that the alternative assessment method, especially portfolio assessment, has the potential to improve the complex task of student assessment, and to promote a more positive attitude toward the educational process. This study aims to identify pre- and/or in-service teacher attitudes towards assessment, especially portfolios, using data from students enrolled in a Master's
level English as a second language (ESL) assessment course in a US mid-south university. Researchers use surveys and interviews to understand the use of portfolios as an alternative assessment procedure. Researchers found as to the usefulness of portfolios as assessments and the likelihood of their using them in their teaching.

**Literature Review**

Ongoing educational reform offers new insights into ways to assess students. Many researchers believe that traditional assessments such as standardized tests often ignore prior knowledge and thinking strategies (Zollman & Jones, 1994) and is limited to assessing student outcomes at a specific point in time rather than monitoring the progress during the teaching and learning process (Thompson, 1995). This dissatisfaction with the use of traditional assessments calls for more authentic student assessment. Recently, there has been growing interest among educators in alternative forms of assessment.

"Alternative assessment is any method of finding out what a student knows or can do that is intended to show growth and inform instruction and is not a standardized or traditional test" (Pierce & O’Malley, 1992, P.1). More student involvement is encouraged in planning assessment, understanding results of assessment, and in self-reflection. One such approach which has gained popularity in the last few years is portfolio assessment. The essential difference of portfolio assessment and other forms of assessment is that portfolios make it possible to document the unfolding process of teaching and learning over time (Wolf, 1991), so they can be used as an approach for combining the information from both standardized and alternative assessment. In this literature review,
some principles of portfolio assessment will be overviewed briefly. The focus is on the
definitions and content of portfolios, the advantages and problems of portfolios, the
influence of portfolio assessment on student motivation and teaching instruction, and
teachers' attitudes and knowledge about portfolio assessment.

**Definition and Content of Portfolios**

A range of definitions of the portfolio exist, illustrating the development and
diversity of its use. Cameron (2001, P. 237) has explained the original use of portfolios by
saying: "Artists, photographers and architects often build up portfolios, in which they put
together pictures they feel best represent their style and skills. They then use the
portfolios to demonstrate what they have to offer to potential customers and employers."
Portfolios in classrooms today are derived from the visual and performing arts tradition.
They present "a practical approach to assembling student work, interpreting evidence of
student performance, and assessing student performance relative to instructional
objectives" (O’Malley & Valdez Pierce, 1996, P.15).

When considering what kind of material would be appropriate in a portfolio, it
is important to remember that the portfolio is not random and is much more than a simple
folder of student work. There is no single correct way to decide the content of portfolios.
Various kinds of things that can be included in a portfolio are tests, quizzes, journal
entries, homework, writing samples, projects, checklists, graphs of student performance,
or the products of student activities. But the true meaning of a portfolio is more than that.
Portfolios must be systematic, organized evidence that can be used to measure growth of
knowledge, skills, and attitudes by the teacher and student. Friedman et al (2001)
mentioned two major components of portfolios 1) a collection of evidence of events and experiences, and 2) a student self-reflection on what has been learned. So in practice, it may contain not only a student's collection of ongoing work that show the creation of a product, developing through various stages of conception and revision, but also the student’s self-assessments and comments from peers and teachers. Besides, student work in portfolios should be measured against predetermined scoring criteria which may include scoring guides, rubrics, check lists, or rating scales (O’Malley & Valdez Pierce, 1996).

**Advantages and Disadvantages of Portfolios Use**

Portfolio assessment provides "opportunities for a revolution in assessment" (Calfee & Perfumo, 1993, P. 532). It has been adopted in different levels of schooling and many subject areas. As Mitchell (1992) observed, portfolios are the best known form of performance assessment that are accepted from kindergarten through graduate school. Teachers in the subject areas of language arts, social studies, math, and science (Adam and Hamm, 1992; Crowley, 1993; Slater, 1994) agree that there are numerous potential benefits of portfolio assessment. In the field of second or foreign education, some of the advantages of using portfolios are obvious. They provide students with opportunities to display good work, serve as a vehicle for critical self-analysis and autonomy, and demonstrate mastery of a foreign language. For example, Hancock (1994) found the use of portfolio assessment shows great promise in the language teaching field, particularly in regard to writing skill. The greatest overall benefit of using portfolio assessment is that language students become independent thinkers and autonomous learners. Gomez (2000)
has discussed the advantages and challenges of using an assessment portfolio system that includes English as a second language learners (ELLs) as a district-wide assessment tool. The advantages of assessment portfolio systems for ELLs are summarized by Gomez as following points: inclusion of all English language learners in an assessment system; increased school accountability for all students; a shared vision of student goals and standards; and more authentic evaluations of learning; improved teaching and student learning; and reflection of assessment reform.

Even though results in using portfolio assessments are positive, some educators found some issues that do seem to affect the portfolio implementation process. Many researchers agreed that portfolios make further demands on teachers and students as well as on school resources. In Koretz’s (1994) study teachers indicated some concerns about the use of portfolios: time demands of planning and implementing portfolios; uncertainty about reliability and validity of portfolio evaluation; problems in maintaining portfolios; difficulties in deciding the content of portfolios. The problem of cost is mentioned in Gomez’ study (2000), because designing, implementing, and scoring portfolio items is labor intensive. Another difficulty reported by the teachers whose students need to take standardized examination is test-oriented teaching and assessment. For example, Bekiroglu (2008) used attitude maps to evaluate physics teachers’ attitudes towards alternative assessment in Turkey. The participants of the study were ten volunteer pre-service physics teachers enrolled in a teacher education program. The internal factors that affected pre-service teachers’ predispositions for alternative assessment were their self-efficacy regarding their assessment skills and subject matter knowledge. The most
common external difficulty on teachers’ implementation of alternative assessment was environmental pressure to teach their high school students towards success on the national university entrance examination.

**Influence of Portfolio Assessment on Student Motivation and Teaching Instruction**

Nearly all researchers agree that alternative assessment has powerful effects on promoting students' motivation and learning. Portfolios can be used to evaluate both products and process, and they allow the integration of learning and assessment. By focusing on the process of teaching and learning, and involving students as active partners in portfolio assessment, portfolio assessment builds students’ skills at self-reflection and peer-assessment, enhances their academic achievement and helps them develop a range of effective learning strategies for lifelong learning. For example, Sweet (1993) indicated that portfolios can serve as a vehicle for enhancing student awareness of their learning processes and learning strategies involved in writing, solving a problem, researching a topic, analyzing information, or describing their own observations. Just as assessment affects student motivation, it also influences the nature of instruction in the classroom. Teachers can use alternative assessment information to guide their classroom instruction to understand what activities and assignments will be most useful and what level of teaching is most appropriate (McMillan 2000).

**Teacher Attitudes and Knowledge towards Portfolio Assessment**

Previous research (Salinger & Chittenden, 1994) indicates that teachers value portfolio assessment for the benefits to their students and also state appreciation for the increased communication with their students. For example, Ford and Ohlausen (1991)
surveyed teacher education students’ attitudes, beliefs and habits concerning portfolio assessment. The participants believed portfolios provide positive indicators of student growth and teacher confidence. The authors also suggest that graduate coursework can be an important way to produce a positive effect on teachers’ knowledge, beliefs, and classroom practices related to alternative forms of assessment. Nevertheless, teachers feel frustrated about time management, criteria for evaluation, scoring reliability, inadequate knowledge and lack of preparation or external supports (Watson, 2000; Watt 2005). In the context of foreign language teaching, Zhang (2009) describes the results of an investigation into the use of portfolio assessment in primary schools in China. Although teachers in the study reported that they benefited from using portfolio assessment, the author concludes that there is a long way to go before portfolio assessment can become common practice widely accepted and implemented in Chinese assessment context. The factors that might have hindered its progress include the over use of tests in the society and in schools, teachers’ lack of portfolio assessment skills, insufficient administrative support, and the influence of the traditional Chinese teaching philosophy. He points out that portfolio assessment can become a successful form of assessment only when classroom teachers are willing to use portfolio assessment and truly understand portfolio assessment procedures.
Method

Research Questions

The study is an attempt to answer the following two questions: What are teachers’ beliefs about assessment? How do they describe their use of assessment methods in their practice?

Participants

The participants were 20 students who were taking an M.Ed. second language (SL) assessment course at a university in Arkansas. Some of the participants were in-service and some pre-service teachers. The course was one of four required by the state for endorsement in English as Second Language (ESL). Before survey, they were told that their decision to participate or not would bring no negative consequences --- no penalty to them. Anonymity was preserved by using codes for the participants.

Instrument and Data Collection

Teachers attitudes towards five dimensions of assessment form the basis of the study: relationship between assessment and instruction, assessment determination, assessment methods, evaluation criteria and difficulties. The first instrument was a assessment questionnaire with two sections. Section one focused on the participants’ demographic information. Thirteen open-ended questions were designed to ascertain gender, age, level of education, area of concentration, teaching experience, teaching level and professional development activities. Section two consisted of eleven questions with
33 items. Among them six questions were adapted from a questionnaire developed by Bekiroglu (2008) [used with permission]. A five point scale, ranging from no relationship to high relationship and not applicable (NA) was used. When the questionnaires were returned, responses were tallied for each subscale. The second instrument, audio-taped interviews were conducted in the researchers’ office at the university one week after the questionnaire was collected. Five of the 20 participants who received the questionnaire volunteered to take part in the face to face interview. Each interview lasted 30-40 minutes. Twenty three open-ended guiding questions were used for the semi-structured interview. The purpose of the interview was to elicit the participants’ attitudes towards assessment, especially portfolios. The answers of participants were transcribed by the researchers and qualitative analysis was made to capture participant perspectives and validate results drawn from the quantitative research.

Results

Quantitative Research

Question 1 and question 2 of the assessment questionnaire dealt with teacher attitudes towards the relationship between assessment and instruction. The most reported relationship was that assessment should cover students’ reasoning and students’ application of what s/he learned. The least reported relationship is that assessment should cover students’ recall knowledge. When reporting their instructional practices, all 20 participants used activities enabling discovery learning, and only one used teacher presentation of information. When looking at their determination of assessment, 17
participants considered student effort and improvement in performance since the beginning of the year highly when evaluating students’ performances. Only three participants considered performance compared to other students from previous year. All subjects felt confident or very confident when giving feedback and writing objectives. All of them also felt confident or very confident when using results of assessment to help students learn. 18 of 20 felt confident or very confident to use different assessment methods for different purpose. Question 5, 6 and 7 investigated their assessment methods. 18 of 20 stated they used informal observation and questions. Portfolio was used (or planned to be used) by half of the respondents. Three participants reported using exams as one assessment method. All of the participants agreed or completely agreed that portfolios were an accurate representation of students’ work and could be a vital tool for transitioning from grading to evaluation. 16 participants agreed or completely agreed portfolios promoted more positive attitudes toward learning among students. Given an ideal situation, 14 participants indicated that they would use portfolio assessment in their classroom in language arts. Four said they should be used across curricula, and Two in science. Question 8 suggested that 12 participants out of 20 were confident or highly confident during the preparation of valid assessments, 10 during the preparation of scoring rubrics, also 8 during evaluation of portfolios. When looking into evaluation criteria to evaluate students’ portfolio 15 participants considered “the evidence of improved levels of achievement” and “the reflection sheets demonstrate student growth in self-evaluation and the peer-evaluation processes.” Five considered “the student has concluded the required number and type of assignments in the portfolio”. When reporting
the difficulties they encountered during the implementation of portfolio as an assessment tool, three indicated not applicable, 15 chose external difficulties, two felt inadequate in their subject matter knowledge, and three thought it causes too much extra work for teacher and students. In addition, as disadvantages of portfolio, eight considered maintaining portfolio can be problematic and time-consuming, seven thought it was hard to ensure that portfolios are accurately recorded and scored students’ performance, and five participants thought portfolio assessment was more subjective than traditional testing, and reliability and validity can be questionable.

Qualitative Research

Qualitative analysis was based on the transcriptions of the face to face interviews. Five of the 20 participants who received the questionnaire volunteered to take part in the face to face interview. The data reported in Table 1 reflected the participants’ demographic information.

TABLE 1 GOES HERE

The researchers analyzed the data inductively to identify the themes which was intended to give structure and coherence to the data. Examples from interviews were selected for illustrative purpose as typifying certain themes, providing insight into the participants’ attitudes towards assessment, especially portfolios.

Relationship between Assessment and Instruction. As to the participants’ view on relationship between assessment and instruction, they were asked three questions to describe: their teaching methods, the factors they consider when they plan their
instruction and the relationship between instruction and assessment. The participants reported using various teaching methods such as combinations of direct instruction and collective cooperating learning (P1), guided practice (P2), reading recovery (P3) and andragogy [adult learning strategies] (P5). P4, only one pre-service teacher stated that she didn’t know much about teaching method. When being asked to identify the factors they consider when they plan their instruction. All of them agreed that students’ abilities are the main factor. Other factors mentioned were content and difficulties of lesson, students’ need and learning styles, time and class size. All five participants thought there was a relationship between instruction and assessment and the two processes interacted.

Teachers should assess students on the objectives of their instruction and use assessment information to guide their instruction. Participant 1 and 5 gave these examples:

I do have a plan. I will think about that what the assessment is [supposed to be] like at the end and plan how much work we need to do to get there. (P1)

During the instruction, students should be able to understand what is expected for the assessment. A good assessment, anyway, can evaluate how well the students learn from instruction. (P5)

Moreover, all participants had confidence in using assessment information in planning instruction. Informal assessment, such as questions, and formative assessment were used when they described how to use assessment information in planning instruction.

P5 said:

For example, I have taught for three or four weeks. If they did fantastic in the first assessment, I know they are keeping with the materials that I’m teaching. If they didn’t
do as I expected, then I have to make some adjustments to change my either teaching plans, or teaching methods or assessment methods. So with assessment you always find something out.

**Beliefs about Assessment.** The responses to interview Question five to eight revealed the participants' general beliefs about assessment. The most common definition about assessment among the participants was demonstration of what the students have learned and determination of the level of student’s learning. Besides that, P1, P2 and P5 also used assessment as a tool to evaluate and reflect on their teaching:

As a teacher, I need assessment to know if I can move on, if I can keep teaching more materials, and know what the students are struggling with. It’s also an evaluation of my teaching method. (P2)

Without assessment, I can’t really know if I have fulfilled my goal as a teacher, fulfilled my responsibilities to make sure students understand the material. … So it can like a reflection. Without it, you can’t really reflect what you have achieved in the past or during a period of time. (P5)

As for their views on the impact of the assessment on the students’ learning, the five participants agreed on the positive impact of assessment on students’ learning. They thought that assessment can provide students feedback and study guide. Only P 3 emphasized that the impact can be both positive and negative.

It can be both positive and negative. For me schooling was just very negative thing. There are always tests, you know, paper- pencil tests. Timed usually made it even more difficult for me. I think teachers should not take this kind of feeling into classroom. I hope I make
the classroom a little more stress free. (P3)

When the participants were asked about the frequency of their assessment, the majority of the participants used informal assessments on a daily basis. Formal assessment happened every two weeks or one per month. The participants used different kinds of assessment methods to elicit different ideas and skills from their students by: giving them options of the ways that they can show themselves (P1); using group projects (P2); using portfolios (P3); informal assessment such as talking to students (P4); using different approaches based on the understanding of the students’ learning styles (P5).

**Assessment Methods.** Questions 9 to 14 fell into three aspects of teachers’ specific choices on assessment methods in practice. The first aspect was about assessment methods used in their classroom and the reasons. The responses from the five participants are summarized in Table 2. The second component was concerned with differences between traditional assessment and alternative forms of assessment. In the participants’ opinion, traditional assessment is paper-pencil tests, quizzes, multiple choice-tests, written tests on the fundamental knowledge of students. Four of them preferred alternative assessment, which was regarded as productive, ongoing, and informal. P3 said:

One test is not going to benefit every student. Students are not all on the same level. As a teacher you see what is [appropriate] for them and give them an assessment according to the goal…. In the traditional assessment, you have to compare the students with other students. In some alternative form of assessments, you just compare the student with himself.
P5 suggested integrating both traditional and alternative assessments so students would know the fundamentals of the subject and can apply what they learned.

**TABLE TWO HERE**

The third aspect was about the use of portfolio assessment. Among five participants, two are using portfolio, one is starting to use it, and another two are not using portfolio. The using status and the reasons behind that were listed in Table 3.

**TABLE THREE HERE**

As for their views on the responsibilities students have towards their portfolios, the participants’ responses fell into four dimensions: creating, selecting and keeping their work; demonstrating their progress; providing reflection on their work; working together with other students and teachers. All of them believed that portfolios promote more positive attitudes toward learning among students.

**Evaluation criteria.** The evaluation criteria included the contents and criteria of portfolio, and evaluation steps. First the participants were asked to list the materials they think would be appropriate in a portfolio. The list included samples of student work, tests, quizzes, homework, essays, PowerPoint presentations, pictures, tapes, videos, projects, group work, reflections, and learning diaries. Then they declared the criteria for a successful portfolio as following: completed, clear, organized, multiple types, longitudinal, standing the test of time, demonstrating their understanding of the instruction objectives, indicating progression and learning abilities, and showing reflections on learning. Regarding the ways to evaluate portfolios, four of the five participants emphasized the use of the rubric. Three of them expressed concerns over
scoring reliability.

I’m going to use the rubric. So I can at least have some degree of validity to it and explain to somebody else how I got this grade. (P1)

I would probably use a rubric, so the students know beforehand how they would be graded. (P2)

You need to make sure you have a good rubric. It’s fair, complete and concise. (P3)

The grades should be determined on how well they follow the objectives, follow the rubric…Rubric is something I need to have when I evaluate. (P5)

**Difficulties.** Difficulties during teacher implementation of portfolio assessment can be divided into two parts: internal and external difficulties. Internal difficulties can be subdivided into the teachers' lack of knowledge of subject matter and assessment skills.

All participants felt confident in their own knowledge of subject matter. Two felt confident in their assessment skills. However, the other three reported that they felt less confident in their assessment skills and that challenges do or could affect their implementation of portfolio assessment.

I feel less confident in assessment skills, but maybe I will feel more after taking the assessment class. I ’m most comfortable with giving quizzes or homework assignment. And I’ m least comfortable with portfolios. I guess because when I was in school I never did it. I think it is very difficult and very stressful, and I don’t have much guidance. (P2)

Those frequently identified external difficulties included the following problems: time constraints, space constraints (storage of portfolios), technology, planning, creating rubrics, grading, support from principals, explaining to students, and their own
lack of training. Three participants thought portfolio assessments to be extra work for teachers and students, especially the first time. P2 and P3 thought that it depended on teachers’ correct implementation. If teachers plan carefully and explain the objective to the students well at the beginning of the project, then portfolios might not be extra work for both teachers and students. Otherwise it is stressful for teachers and students.

Discussion and Conclusion

The results of this study suggest possible answers to the two research questions--certainly enough to warrant further investigation. We have tried to discuss those ideas here in the text and graphically with a model (See Diagram in tablet 4) drawn by the researchers to show the relationship between the dimensions that formed the teacher attitudes towards assessment and in particular portfolio assessment. This model represents our theory as to pre-and in-service teachers views about portfolio and possibly, by extension, alternative assessment practices as a whole.

TABLE 4 HERE

So, what are teachers’ beliefs about assessment? The questions can be answered in three ways. The first is teachers’ choices concerning teaching methods, the second is their determination of the type of assessment to be used, and the third is teacher beliefs about the relationship between assessment, instruction, and learning.

As to the teachers’ decisions about teaching methods, students’ abilities were mentioned as main factors when planning instructional activities. Other factors included content and difficulties of lesson, students’ need and learning styles, time and class size.
In the questionnaire, all teachers preferred using activities that enable discovery learning. In interviews, they listed multiple teaching methods, such as whole class discussion, direct instruction combined with collective cooperation, guided practice, reading recovery, and classroom strategies for differentiation of levels of learning (by age or other special needs).

According to the teachers’ definition, assessment should be a demonstration of what the students have learned and a correct diagnosis of students’ learning to design strategic lessons and individual goals of instruction. Assessment was also regarded as a tool to evaluate and reflect on their teaching. The definition of assessment revealed the teachers’ awareness of the effect of assessment on both students’ learning and teacher practice. The questionnaire results indicated that the participants’ ideas about assessment covered student’s reasoning and students’ application of what s/he learned. The findings are in line with standard practice concerning higher-order and complex cognitive skills considered when they planned their instruction — using activities that engender discovery learning. Student efforts and improvement in performance were important evaluation criteria and helped with planning individual student future needs. The interview provided indications as to the evaluation criteria. One idea was that student work should be compared against students' own work rather than other students. McMillan (2000) also found that teachers pay much more attention on efforts and improvement than on results comparison with other students when grading. This is supported by educational research about collaboration and competition (McMillan, 2004).

The results indicated that the relationship between instruction and assessment
was interactive. The arrow from teaching methods dimension to the assessment
dimension showed that teachers assessed students on the objectives of their instruction.
On the other hand the arrow from assessment to teaching methods represented that
teachers used assessment information to guide and evaluate their instruction. They were
confident in using assessment information in planning instruction and using different
assessment for different purposes. The findings are in line with many previous researches,
which indicated that effective assessment promotes integration of assessment and
teaching (Wilson, 1994; Pilcher, 2001). Bekiroglu’s study (2008) also found pre-service
physics teachers thought that assessment and instruction were two processes that fed each
other. The arrows from teaching methods and assessment dimension to learning
dimension indicated the impact of instruction and assessment on students’ learning. Most
of the teachers agreed on the positive impact of assessment on learning. According to the
questionnaire, the teachers felt confident in using different kinds of assessment methods
to elicit students’ distinct ideas and skills and the importance of using results of
assessment to help students learn. The findings are validated by the results drawn from
the interviews. The interviewees stated that they used different assessment approaches
such as group projects and portfolios, and they also believed assessment can provide
students with feedback and guidance for future study. It was interesting to find that one
participant was aware of the negative impact of assessments (meaning test-taking in
general) on learning, probably because of her own negative test-taking experiences.

Then how do the participants describe their use of assessment methods in their
practice? Teachers' beliefs concerning assessment, at least in part, "shaped" their
conceptions of assessment methods in their classroom. The results revealed that most of
the teachers expressed confidence about their ability to prepare valid assessment. They
had favorable attitudes toward including various assessments in practice. Alternative
assessment methods such as observation, questioning and portfolios, regarded as
productive, ongoing, and informal, were preferred by most of the teachers. The teachers
indicated that they should integrate alternative assessment with traditional assessment in
order to promote student achievement on both fundamental knowledge and higher-order
and complex cognitive skills. Wolf (1991) offered one way to integrate traditional and
alternative assessment in his study. He pointed out that portfolios make it possible to
document the unfolding process of teaching and learning over time, so they can be used
as an approach for combining the information from both standardized and alternative
assessment.

The use of portfolio assessment was specifically addressed in this study. The
focus was on the advantages, contents, and evaluation of portfolios, and what teachers’
viewed as challenges in the implementation of portfolios. In the interviews, four of five
in-service teachers used portfolio assessment in their classroom. Some of the reasons
given were 1) keeping track of students’ progress and growth; 2) promoting more positive
attitudes towards learning among students; 3) helping students reflect their learning; 4) helping teachers evaluate their teaching; and 5) offering a product that is readily available
and accessible to parents and other educators. The above reasons enhance the findings of
other researchers (Lustig, 1996; Bekiroglu, 2008)) which indicated that portfolios provide
self-assessment, teacher assessment of students’ different skills and skill levels, help
teachers observe continuing growth in student’s performance. At the same time the reasons also offer teachers impressions about assessment and the relationship between assessment, instruction and learning. Portfolios, according to these participants (and research in the field), is an effective way to bring assessment into harmony with instructional goals and learning.

Participants' responses to questions about portfolio contents can be classified into two categories: samples of students’ work which demonstrated improved achievement (homework, essays, tests, quizzes, PowerPoint presentations, photographs, video and audio tapes, project work, group work) and students self-reflection (learning diaries, reflection sheets). The results confirmed Friedman’s findings that the content of portfolios can be divided into two types: work samples and reflection (2001). Findings from the questionnaires indicate at least two portfolio evaluation criteria--improved achievement level and growth in self-evaluation and peer-assessment. The results are closely related to two categories of portfolio contents. Interview results offered more evaluation criteria such as completed, clarity of expression, organization and longitudinal information about students. It confirmed Varvus (1990) who indicated that portfolios must be systematic, organized evidence that can be used to measure growth of knowledge, skills, and attitudes by the teacher and student. Additionally, the criteria “understanding instruction objective” reflected the participants' understanding of the relationship between assessment and instruction and its impact on grading. When asked how to evaluate portfolios, in-service teachers thought rubrics must be created before students begin the work and must be explained to students clearly. However, the results of
the questionnaire suggest that participants have relatively low confidence about preparing scoring rubrics. The interview results indicate participants were concerned about the difficulties in the implementation of effective portfolio assessments.

On the graphic organizer, an arrow points from implementation difficulties to portfolio assessment in practice. Findings indicated that participants recognized challenges that might affect the choice and implementation of effective assessments. The results showed there were a number of challenges recognize by participants toward the successful implementation of portfolio assessments. The most frequently mentioned difficulties in previous studies (Koretz’s, 1994; Forgette-Giroux et al, 2000) were time, space, support and extra work. The participants in this study also indicated concerns about difficulties in evaluating portfolios such as creating rubrics, grading portfolios, and scoring reliability. When examining the reasons for not using portfolio assessment in practice, participants offered that previous experiences and training on assessment also impact the implementation of portfolio assessment in practice. Negative experiences using alternative assessments and lack of knowledge and skills concerning assessments prevent teachers from using portfolios in their classrooms. The finding coincides with Forgette-Giroux et al (2000). Their study indicated that the factors affecting teacher attitudes towards assessment methods included previous experience with portfolios, training support, guidance, and the specific content area taught.

**Implications**

Constructivists emphasize that instruction and assessment are two processes
that influence each other. That is, both are equally important when creating curriculum of
lesson units. Teachers have an important role in determination and implementation of
effective assessment methods that correctly evaluate student performance. Teachers must
be adequately prepared to create accurate assessment strategies for their students. It is
important that teachers consider individual student's needs and characteristics. In this
study although participants' attitudes towards portfolio assessment are relatively positive,
the issue of lack of training and experience with alternative assessments, especially for
novice teachers, poses a viable threat to the effective and widespread use of portfolio
assessment in practice. Moreover, the scoring reliability and subjectivity of portfolio
assessment are major concerns during the teachers’ implementation of portfolio
assessment. Therefore, increased knowledge and adequate preparation on ways to develop
and evaluate portfolios effectively are necessary. Research into the efficacy of portfolio
assessment has just begun; extensive and longitudinal studies are also needed.
References


Table 1: Demographic Information (Note: for professional development activity hours, participant No 4 is pre-service teachers, they refer to course hours related to teaching)

<table>
<thead>
<tr>
<th>No.</th>
<th>M/F</th>
<th>Age</th>
<th>Level of education</th>
<th>Area</th>
<th>Pre/in service</th>
<th>Course</th>
<th>Teaching level</th>
<th>Class size</th>
<th>PD</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>F</td>
<td>37</td>
<td>Master</td>
<td>Secondary education</td>
<td>in</td>
<td>Keyboarding, Accounting</td>
<td>7-12th grade (Secondary)</td>
<td>30</td>
<td>45hs</td>
</tr>
<tr>
<td>2</td>
<td>F</td>
<td>25</td>
<td>Bachelor</td>
<td>Math</td>
<td>in</td>
<td>Math, Geometry, Algebra</td>
<td>10th grade (High school) Undergraduate (College)</td>
<td>15-35</td>
<td>7hs</td>
</tr>
<tr>
<td>3</td>
<td>F</td>
<td>42</td>
<td>Master</td>
<td>Elementary, ESL</td>
<td>in</td>
<td>History, Reading</td>
<td>1st, 2nd, 7th, 8th, 9th-12th</td>
<td>11-45</td>
<td>20hs</td>
</tr>
<tr>
<td>4</td>
<td>F</td>
<td>22</td>
<td>Bachelor</td>
<td>Spanish</td>
<td>pre</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>80hs</td>
</tr>
<tr>
<td>5</td>
<td>M</td>
<td>31</td>
<td>Master</td>
<td>Work development, education</td>
<td>in</td>
<td>Method of research, Communication, English</td>
<td>College, vocational school</td>
<td>8-85</td>
<td>20hs</td>
</tr>
</tbody>
</table>
**Table 2: Assessment methods used in classroom and participants' reasons**

<table>
<thead>
<tr>
<th>Participant</th>
<th>Assessment methods</th>
<th>Reasons</th>
</tr>
</thead>
</table>
| P1          | project-based assessment/ portfolio-based assessment | test consistently  
give students’ choices  
students can work together |
| P2          | individual test in public school  
project assessment / group assessment in university | The teaching goal was to help students pass state test.  
Group work use all resources available to solve a problem |
| P3          | reading recovery methods | in-depth and meticulous  
Focus in and analyze students  
Give teacher feedback and reflection |
| P4          | written test, quizzes | teach Spanish |
| P5          | skit or performance  
different assessment methods | Teach oral foreign language  
Stimulate students’ thinking, not only memorizing phrases  
The most effective one is the one goes the best with the students, teachers and teaching plans. |
Table 3: Use of portfolio assessment and reasons

<table>
<thead>
<tr>
<th>Participant</th>
<th>Using or not using</th>
<th>Reason or concern</th>
</tr>
</thead>
<tbody>
<tr>
<td>P1</td>
<td>starting to use</td>
<td>Help students reflect</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Bring it to parents</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Grading is a little bit scary.</td>
</tr>
<tr>
<td>P2</td>
<td>No</td>
<td>Have to do a lot of planning.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Time-consuming</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Nor familiar with</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Teaching subject (math)</td>
</tr>
<tr>
<td>P3</td>
<td>Yes</td>
<td>Bring it to parents-teacher conference</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Be shown to other teachers</td>
</tr>
<tr>
<td>P4</td>
<td>No</td>
<td>Pres-service teacher</td>
</tr>
<tr>
<td>P5</td>
<td>Yes</td>
<td>Keep track on students’ progress</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Evaluate on teachers’ teaching method</td>
</tr>
</tbody>
</table>
### Table 4: Dimensions of attitudes toward portfolio assessment

<table>
<thead>
<tr>
<th>Teaching Methods</th>
<th>Definition</th>
<th>Cognitive Levels</th>
<th>Frequency</th>
<th>Evaluation Criteria</th>
<th>Confidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Activities enabling discovery learning</td>
<td>Demonstration of what students have learned</td>
<td>Students’ application of what s/he learns</td>
<td>Daily (informal); 2 or 4 weeks (formal)</td>
<td>Student efforts in performance</td>
<td>Using assessment information in planning instruction</td>
</tr>
<tr>
<td>Whole class discussion</td>
<td>Determination of the level of students’ learning</td>
<td>Student reasoning</td>
<td></td>
<td></td>
<td>Using different assessment methods for different purpose</td>
</tr>
<tr>
<td>Direct instruction + collective cooperating</td>
<td>A tool to evaluate and reflect on teaching</td>
<td></td>
<td></td>
<td></td>
<td>Using the results of assessment to help students learn</td>
</tr>
<tr>
<td>Guided practice</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Preparation of valid assessment</td>
</tr>
<tr>
<td>Reading recovery</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Strategies for diversifying</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Assessment Methods in Practice

**Alternative assessment:**
- Observation; Questioning; Portfolios; Project; Performance, Quizzes
- Reasons: productive, ongoing, multiple methods

**Portfolio assessment**
- Reasons: keep track on students’ progress and growth; promote more positive attitudes towards learning among students; help students reflect their learning; help teachers evaluate on their teaching; can be shown to parents and other teachers

#### Contents of portfolio
- Homework, essays, tests, quizzes, PPT presentation, photos, videos, tapes, project work, group work, learning dairy, reflection sheet

#### Implementation Difficulties
- Time, Space, Technology
- Planning, Assessment skills, Creating rubric, Grading, Scoring reliability, Support, Training, Previous experiences, Extra work

#### Portfolio Evaluation Way
- Rubric

#### Portfolio Evaluation Criteria
- Improved achievement level
- Growth in self-evaluation and peer-assessment
- Progression in learning abilities
- Understanding instruction objective
- Standing test of time
- Completed; Clear; Organized; Multiple methods; Longitudinal

Yu (2010)
a. Title:
A Study of 'Emotional Labor' of Early Childhood Teachers in Educational Settings.

b. Topic:
Early Childhood Education

c. presentation format:
Poster Session

d. abstract:
Early childhood teacher's emotional experience accepted a social construct dimension rather than being a personal psychological dimension in education activities. The purpose this study is to understand and analyze labor of early childhood teachers in kindergarten.

The purpose this study is to understand and analyze labor of early childhood teacher in kindergarten. In context of teaching, early childhood teachers tend to work hard with their emotion to make more effective interactions with young children. They tend to manage, adjust and control their emotions rather than express their real emotion as it is. So, we call it is tend to be called like 'emotional labor'. In order to understand the characteristics of teachers' emotional labor at deeper level, this study in-depth interviewed 10 of kindergarten teachers. Then the collected data were analyzed in qualitative ways. The results of study told us that in relation to the 'emotional labor', many of early childhood teachers experience feeling of frustration, stress, anxiety, and patience. This study also showed that there seem to exist four ways of tendencies to rules and control teachers emotions themselves; trying to corresponding themselves to the social expectation of teaching, using self-regulative system as teachers, accepting characteristic of caring in kindergarten, and having obsessive thoughts to interact with children. In order to overcome the hardness of emotional labor, teachers try to engage in emotional management such as suppress one's emotions and indifferent to structural problems, colleague teachers to talk about the problems. In conclusion, this study suggests that there should more educational efforts based on teacher's sympathetic understanding to help early childhood teachers themselves more effectively control and overcome the hardness of emotional labor.

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Consumer Education for Processing Information

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[Abstract]

Consumer education is the process of developing and enhancing skills and knowledge to facilitate informed and well-reasoned choices by taking societal values and objectives into account (OECD 2009). Consumers are exposed to plentiful information including both risks and benefits, and are forced to choose information necessary for making their decisions. Consumer education programs could help to improve cognitive processes, buying behaviors, and satisfaction levels (Bloom & Ford, 1979, Consumer Affairs Agency Government of Japan, 2013).

Previous studies have reported that consumers tend to excessively trust information about risks and use it for making decisions. Hanao (2013) reported that consumers attended more to information emphasizing risks than benefits of food additives. However, many products do have benefits, as well as risks. Consumers are concerned about the risks of food additives, including cancer-causing substances and those inducing allergic reactions. However, food additives actually bring many benefits to consumers including preserving food from decay, enhancing its flavor, and appearance. Biased views about products that lack objectivity might lead consumers to make distorted judgments. If consumers develop the habit of attending to both risks and benefits of products, they might become more confident in making their own judgments, and become more satisfied with their purchases.

This study aims to examine how consumers process information about risks and benefits of food, and make purchasing decisions. The findings are discussed in relation to consumer education, and developing independent consumers who can adequately evaluate product information.

[References]

Practice and Effects of Question-posing Activities in Programming Education

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To improve the effects of learning in programming education, the authors used mixed activities of question-posing and mutual evaluation by students. However, results showed that most students reported difficulty in question-posing and reported decreased motivation for learning. Therefore the authors assigned the task of using a textbook to produce multiple-choice quiz questions after choosing important points to be discussed. Our questionnaire survey about the question-posing and mutual evaluation, administered after the lesson, revealed that question-posing using a textbook reduced question-posing related difficulties and improved motivation for learning. Another finding is that students consider that learning contents and comments for erroneous answers to questions are important.

Keywords: question-posing, collaborative learning, blended learning, programming education

1. Introduction

The use of information and communications technology for education has become popular. People are devoting attention to e-learning. Nevertheless, students who drop out of a learning program and stop e-learning without completing a course of education have presented a difficulty for such modern systems. Blended learning, which blends e-learning and face-to-face class activities, is therefore becoming increasingly popular.

Aiming at improving the learning effects of programming education, the authors have conducted blended classes that combine individual learning that takes place using e-learning, collaborative learning by students’ mutual evaluations, and our own algorithm production support system in styles of classes such as mass teaching (5). A questionnaire survey administered after the courses and results of tests demonstrated that the blending of quizzes with e-learning was beneficial for knowledge promotion of the learning contents. Furthermore, to ensure the improvement of students’ knowledge, the authors blended the question-posing activities. Question-posing activities are said to be more effective for improving the depth of understanding of learned contents more than by simply answering given problems (1)(2). Therefore the authors tried a practice of blended type teaching programming using the collaborative question-posing environment developed based on Moodle (6). Results of comparisons of test scores obtained from blended classes with and without the question-posing activities revealed that the former was slightly more effective to increase the depth of understanding of the learning contents for programming (7). Results also showed that most students reported difficulties in question-posing and reported decreased motivation for learning (7).
In an earlier study, Nakano et al. developed an environment for intellectual question-posing practice based on mathematical formulae so that users would be able to use them through experiences in which they use knowledge (2). Hirai et al. analyzed the effects of a learning support system based on question-posing applied to an asynchronous distributed environment (3). Takagi et al., aiming at improving the insufficient contents of e-learning and interactivity between teachers and students, developed a collaborative learning WBT system that enables students to pose questions and to receive mutual evaluations from other students (4). Subsequently, they put it to practical use in their group activities. These learning environments are stand-alone systems. They are independent of other learning environments. The authors developed a collaborative question-posing environment on Moodle, an open-source learning management system (LMS), and used it to pose questions and mutual evaluation. In addition, in these earlier studies, analyses using data of the number and quality of questions were accumulated, but no report in the relevant literature has described a study that has addressed shortcomings such as student difficulties and unease related to question-posing.

For this study, the authors practiced the question-posing activities of finding problematic points in a textbook and of posing questions that asked the test-taker to fill in a multiple-choice test. Hereinafter, these are called question-posing activities using a textbook. These activities were designed to ease the difficulty of students and to reduce their unease related to suspecting errors in questions they posed in free question-posing activities. This report describes a study the authors conducted, using questionnaire surveys after practicing question-posing activities performed using and not using a textbook. Results showing a comparison of students’ changes of knowledge and attitudes by these two practices are presented herein.

2. Lesson plan and contents

The authors practiced programming classes with the question-posing activities using a textbook and activities mutually evaluating quizzes for 40 second-year students of the Electronic Intelligence Engineering Department of A-Technical College. Each lesson was 90-min long. Each of the first semester and second semester had 15 class sessions, constituting 30 class sessions in all. Table 1 presents the lesson contents. At the end of each chapter (branch, loop, array, function, and string), the authors let students program the problems and question-posing using a textbook.

In the question-posing activities using a textbook, students described the following: 1. the purpose of the question, 2. the question, and 3. erroneous answers and comments for erroneous answers. The multiple-choice questions present three options. Furthermore, in each student's mutual evaluation activities, they evaluated the relevance validity of questions, locations of blanks, and erroneous answers, assigning scores according to a five-point scale (5. excellent, ..., 1. poor). They also provided comments in a free-response format.

<table>
<thead>
<tr>
<th>No.</th>
<th>Chapter</th>
<th>Learning content</th>
</tr>
</thead>
<tbody>
<tr>
<td>1–3</td>
<td>Introductory C programming</td>
<td>environmental setting, introductory C programming variable, data type, assignment operator operator, input-output</td>
</tr>
<tr>
<td>4–7</td>
<td>Branch</td>
<td>if statement, relational operator switch statement, [Exercise 1], [Question-posing 1]</td>
</tr>
<tr>
<td>8–11</td>
<td>Loop</td>
<td>for statement, while statement do statement, multiple loop, [Exercise 2], [Question-posing 2]</td>
</tr>
<tr>
<td>12–17</td>
<td>Array</td>
<td>one-dimensional array two-dimensional array, [Exercise 3], [Question-posing 3]</td>
</tr>
<tr>
<td>18–22</td>
<td>Function-1</td>
<td>call by value, function and array, [Question-posing 4] graphic function, [Exercise 4]</td>
</tr>
<tr>
<td>23</td>
<td>Pointer</td>
<td>pointer and array</td>
</tr>
<tr>
<td>24–27</td>
<td>Function-2</td>
<td>call by address, pointer and function</td>
</tr>
<tr>
<td>28–30</td>
<td>String</td>
<td>string manipulation, [Question-posing 5]</td>
</tr>
</tbody>
</table>

3. Evaluation

3.1 Development of consciousness and knowledge by activities of question-posing and evaluation

Students performed free question-posing activities in academic year 2012 and question-posing activities using a textbook
in academic year 2013. After 30 classes in each academic year of 2012 and 2013, the authors conducted a questionnaire survey of 28 items related to question-posing and evaluation activities. In them, students assigned scores according to a five-point scale (5. think so..., 1. do not think so). Table 2 presents results obtained using tests of significant difference between mean ratings for consciousness for academic years 2012 and 2013 students. The variables $m$, $SD$, $t$, and $p$ in Table 2 respectively stand for the mean, standard deviation, $t$-value, and significant probability.

Although this is merely a result of questionnaire survey eliciting subjective answers of students, items showing a significant difference suggest the following points for question-posing activities using a textbook.

Table 2. Questionnaire survey about question-posing and evaluation activities

<table>
<thead>
<tr>
<th>No.</th>
<th>Evaluation Items</th>
<th>2012</th>
<th>2013</th>
<th>t</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Question-posing is more useful for reviewing more than answering quizzes.</td>
<td>2.9</td>
<td>3.6</td>
<td>3.5**</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Question-posing is more useful for increasing motivation for learning than answering quizzes.</td>
<td>2.8</td>
<td>3.2</td>
<td>1.5</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Question-posing improves depth of understanding learned contents more than answering quizzes.</td>
<td>3.3</td>
<td>3.6</td>
<td>1.4</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Question-posing improves ability of programming more than answering quizzes.</td>
<td>3.5</td>
<td>3.5</td>
<td>0.3</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Question-posing advances grammatical knowledge of programming language more than answering quizzes.</td>
<td>3.5</td>
<td>3.6</td>
<td>0.2</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Question-posing improves knowledge of programming more than answering quizzes.</td>
<td>3.5</td>
<td>3.6</td>
<td>0.5</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Question-posing works as reviewing.</td>
<td>2.9</td>
<td>3.4</td>
<td>2.4*</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Question-posing improves depth of understanding of learned contents.</td>
<td>3.6</td>
<td>4</td>
<td>1.5</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Question-posing improves ability of programming.</td>
<td>3.6</td>
<td>3.7</td>
<td>1.4</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Question-posing improves grammatical knowledge of programming language.</td>
<td>3.0</td>
<td>3.9</td>
<td>0.8</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Question-posing improves knowledge of programming.</td>
<td>3.0</td>
<td>3.0</td>
<td>0.4</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Evaluating questions of others works as reviewing what one has learned.</td>
<td>3.6</td>
<td>3.9</td>
<td>1.2</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Evaluating questions of others improves the ability of programming.</td>
<td>3.2</td>
<td>3.4</td>
<td>1.3</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>Evaluating questions of others advances the grammatical knowledge of programming language.</td>
<td>3.5</td>
<td>3.7</td>
<td>1.3</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>Evaluating questions of others improves the knowledge of programming.</td>
<td>3.6</td>
<td>3.8</td>
<td>0.8</td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>Blanks of others’ questions are appropriate.</td>
<td>3.7</td>
<td>4</td>
<td>1.4</td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>Options (erroneous answers) of other students’ question are appropriate.</td>
<td>3.7</td>
<td>4.1</td>
<td>1.1</td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>Comments about options (erroneous answers) of other students’ question are appropriate.</td>
<td>3.5</td>
<td>4.0</td>
<td>2.9**</td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>Evaluation of others is appropriate.</td>
<td>3.7</td>
<td>4.2</td>
<td>2.4*</td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>One can accept evaluations by others obediently.</td>
<td>3.9</td>
<td>4.5</td>
<td>3.3**</td>
<td></td>
</tr>
<tr>
<td>21</td>
<td>Evaluations of others help one correct one’s own questions.</td>
<td>4.1</td>
<td>4.2</td>
<td>0.9</td>
<td>0.4</td>
</tr>
<tr>
<td>22</td>
<td>Comments by other students to options (erroneous answers) of questions are appropriate.</td>
<td>3.6</td>
<td>4.1</td>
<td>2.1*</td>
<td></td>
</tr>
<tr>
<td>23</td>
<td>Preparing options (erroneous answers) is difficult.</td>
<td>3.6</td>
<td>3.6</td>
<td>1.3</td>
<td></td>
</tr>
<tr>
<td>24</td>
<td>Preparing comments to options (erroneous answers) is difficult.</td>
<td>4.1</td>
<td>4.9</td>
<td>0.8</td>
<td></td>
</tr>
<tr>
<td>25</td>
<td>Questions made by others are difficult.</td>
<td>3.5</td>
<td>3.1</td>
<td>1.8</td>
<td></td>
</tr>
<tr>
<td>26</td>
<td>Evaluating questions made by others is difficult.</td>
<td>3.9</td>
<td>4.2</td>
<td>1.3</td>
<td></td>
</tr>
</tbody>
</table>

**:** $p < .01  *: p < .05

(1) Question-posing works as a review.

Items 1 and 7 suggest that students of academic year 2013 performed question-posing activities using a textbook, in comparison with students of academic year 2012, regarded question-posing worked as a review and as more helpful to them in reviewing what they learned than answering quizzes.

(2) Question-posing improves motivation for learning.

Item 8 suggests that students of academic year 2013 performed question-posing activities using a textbook, in comparison with students of academic year 2012, demonstrating that question-posing improved motivation for learning. This observation indicates that question-posing activities using a textbook cancelled the shortcoming of the free question-posing activities that reduced motivation for learning.

(3) Reducing difficulty of question-posing.

Students of academic year 2012, who did free question-posing activities, regarded it as difficult for reasons recorded in their free descriptions, as described below.

• I do not understand the subject sufficiently well that I can pose a question myself.
• I am not quite sure if the question I posed is appropriate.
• Providing erroneous answers and advice to them is difficult.

These might have been derived from anxiety related to their depth of understanding.
Item 24 suggests that students of academic year 2013, who performed the question-posing activities using a textbook, in comparison with students of academic year 2012, did not regard question-posing as difficult. This observation indicates that the question-posing activities using a textbook reduced the difficulty related to question-posing.

In question-posing activities using a textbook, students posed questions using descriptions from the textbook, which they thought they understood. Therefore, they did not need to worry about whether the question was appropriate or not. For that reason, the difficulty of question-posing was resolved. Students began to report that question-posing was not difficult.

(4) Evaluation activities become easier.

Items 19, 20, 21, and 23 suggest that students of academic year 2013, who performed question-posing activities using a textbook, in comparison with students of academic year 2012, considered other students' advice about answers (erroneous answers) and their evaluations as appropriate. Furthermore, they seemed to acknowledge advice related to erroneous answers obediently. All students engaged in question-posing activities used a textbook. Therefore, they had already learned about all the contents of other students' questions in the same textbook. For that reason, it was easy for them to understand questions that other students posed. Subsequently, they easily produced their own advice and evaluations.

3.2 Opinions of students about question-posing and evaluation activities

After 30 class sessions, the authors administered a questionnaire survey by free description about the benefits and shortcomings of activities of question-posing and evaluation. Table 3 presents the main points the authors collected. The students’ development of consciousness of question-posing and evaluation activities in academic years 2012 and 2013 is described herein.

(1) Benefits of question-posing activities

In both academic years, many respondents reported that it worked well as a review. Students of academic year 2013 who posed questions using a textbook seemed to read the textbook well, repeatedly studying it to provide advice, and to be confident of finding sample questions independently.

Table 4 presents references that students used during the question-posing activities. They answered by multiple-choice. In academic year 2012, 39 students answered. In academic year 2013, 40 students answered. Of students in academic year 2012, the year of free question-posing, 14 (36%) consulted a textbook, although 36 (90%) did that in academic year 2013. Of students in the class held during academic year 2012, 32 (82%) consulted their exercise book, whereas 23 (58%) did that in the class held during academic year 2013, representing a marked decrease.

The numbers of students for each reference for two years is presented in Table 4. Considering the cross tabulation of reference materials as a 3 × 2 contingency table, the authors performed a \( \chi^2 \) test. The bias of frequency was found to be significant (\( \chi^2 (2) = 12.6, p < .01 \)). Consequently, the authors conducted residual analysis and put "*" in cells that yielded significance and a positive residual. The residual analysis results shown in Table 4 present that students of academic year 2012, who posed questions freely mainly consulted their class notes, whereas those of academic year 2013, who posed questions using a textbook, mainly consulted their textbooks.

(2) Shortcomings of the question-posing activities

Students of the 2012 academic year reported rather negative opinions about decreasing motivation for learning and anxiety to pose inaccurate questions, stating that it was time consuming, discouraging of independent work, and leading to improper questions. Students of academic year 2013, who performed question-posing activities using a textbook, did not report negative opinions about question-posing, such as reducing motivation for learning and anxiety for tough question-posing activities. Many students answered "Nothing in particular" for shortcomings of question-posing.

(3) Benefits of the evaluation activities

Some students in academic year 2012 pointed out that they were able to understand important points related to programming. Furthermore, some students of academic year 2013 felt that evaluation of erroneous answers and advice to them were effective in advancing knowledge. This opinion had not been reported in academic year 2012. Some students answered that question-posing from a different perspective served as a useful reference. Therefore, they might have been aware of the value of the question-posing activities.

(4) Shortcomings of the evaluation activities
The authors heard much anxiety related to evaluation in academic year 2012 students. Students of academic year 2013, who performed question-posing activities using a textbook, showed no such anxiety at all. All students had already learned the entire contents of the textbook. Therefore, they easily understood questions produced by other students and felt no anxiety related to evaluation.

Table 3. Opinions of students about question-posing and evaluation activities

<table>
<thead>
<tr>
<th>Activity</th>
<th>Free description</th>
<th>No. students</th>
</tr>
</thead>
<tbody>
<tr>
<td>Question-posing</td>
<td>It works as a review.</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>It improves understanding of programming in the posing process.</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>It makes sure that one understands well.</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>It is time-consuming.</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>One might make wrong problems.</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>It is difficult and discourage one to work by oneself.</td>
<td>3</td>
</tr>
<tr>
<td>Mutual evaluation</td>
<td>It helps one understand important points in programming.</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>It works as a review.</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>It makes one understand what other students think is important.</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Nothing in particular.</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>One is not sure if one is evaluating others properly.</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>One cannot evaluate unless one understands the subject well.</td>
<td>1</td>
</tr>
</tbody>
</table>

Table 4. $\chi^2$ test of the number of students for reference in question-posing activities

<table>
<thead>
<tr>
<th>Item</th>
<th>Priority order</th>
<th>2012</th>
<th>2013</th>
<th>Total</th>
<th>2012</th>
<th>2013</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Textbook</td>
<td>14</td>
<td>36</td>
<td>50</td>
<td>23.3</td>
<td>26.7</td>
<td>50</td>
<td></td>
</tr>
<tr>
<td>NoteBook</td>
<td>32</td>
<td>23</td>
<td>55</td>
<td>25.6</td>
<td>29.4</td>
<td>55</td>
<td></td>
</tr>
<tr>
<td>e-learning, Web</td>
<td>9</td>
<td>4</td>
<td>13</td>
<td>6.1</td>
<td>6.9</td>
<td>16</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>55</td>
<td>63</td>
<td>118</td>
<td>55</td>
<td>63</td>
<td>121</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Adjusted residual</th>
<th>Significance test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Textbook</td>
<td>-1.9</td>
<td>1.8</td>
</tr>
<tr>
<td>NoteBook</td>
<td>1.3</td>
<td>-1.2</td>
</tr>
<tr>
<td>e-learning, Web</td>
<td>1.2</td>
<td>-1.1</td>
</tr>
</tbody>
</table>

**: $p < .01$, *: $p < .05$, +: $p < .10$

3.3 Priority items in question-posing

The authors asked students to declare priority (1–6 score) of the item regarded as important among the items shown in Table 5, while posing questions. Then the authors conducted cross tabulation of the number of entries in the table. In all, 39 students answered. Seeing this table as a 6 × 6 contingency table, the authors performed a $\chi^2$ test. The results indicate that the bias of frequency was significant ($\chi^2$ (25) = 174.6, $p < .01$). Then the authors conducted residual analysis and put "**" in cells which show significance and a positive residual.
The results of residual analysis shown in Table 5 present that students both of academic year 2012 and 2013 assign highest priority to what they had learned. Students of academic year 2013 who performed question-posing activities using a textbook assigned second priority on options (erroneous answers) and advice to erroneous answers. Actually, as described in 3.2 section, many reported that they made many investigations to give proper advice and evaluations of erroneous answers. They reported that efforts to do so did improve their knowledge. In academic year 2012, no one reported such opinions. In addition, many students of academic year 2012 reported anxiety about posing an incorrect question, but students of academic year 2013 who performed question-posing using a textbook reported no such anxiety.

These observations indicate that the question-posing activities using a textbook removed the anxiety of producing wrong questions and provided students with room to think about erroneous questions and related advice. In neither academic year did students seem to care about the degree of difficulty, usefulness, or originality of questions.

### Table 5. Cross tabulation of prior items and results of \( \chi^2 \) tests

<table>
<thead>
<tr>
<th>Item</th>
<th>Priority order</th>
<th>Actual frequency</th>
<th>Expected frequency</th>
<th>Adjusted residual</th>
<th>Significance test</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Academic year 2012</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Difficulty level of question</td>
<td>1 2 3 4 5 6</td>
<td>4 9 11 7 1 39</td>
<td>6.5 6.5 6.5 6.5 6.5 6.5</td>
<td>39</td>
<td></td>
</tr>
<tr>
<td>Option of question (Wrong answer)</td>
<td>1 2 3 4 5 6</td>
<td>1 6 11 12 7 2 39</td>
<td>6.5 6.5 6.5 6.5 6.5 6.5</td>
<td>39</td>
<td></td>
</tr>
<tr>
<td>Advisory statement for wrong answer</td>
<td>0 0 0 6 15 18</td>
<td>39</td>
<td>6.5 6.5 6.5 6.5 6.5 6.5</td>
<td>39</td>
<td></td>
</tr>
<tr>
<td>Learning contents of question</td>
<td>22 9 3 5 1 39</td>
<td>6.5 6.5 6.5 6.5 6.5 6.5</td>
<td>39</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Originality of question</td>
<td>3 3 9 5 3 39</td>
<td>6.5 6.5 6.5 6.5 6.5 6.5</td>
<td>39</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Helpful for learners</td>
<td>9 12 9 5 1 39</td>
<td>6.5 6.5 6.5 6.5 6.5 6.5</td>
<td>39</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Academic year 2013</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Difficulty level of question</td>
<td>1 2 3 4 5 6</td>
<td>1 2 4 9 13 10 38</td>
<td>6.3 6.3 6.3 6.3 6.3 6.3 38</td>
<td>38</td>
<td></td>
</tr>
<tr>
<td>Option of question (Wrong answer)</td>
<td>9 14 11 4 0 38</td>
<td>6.3 6.3 6.3 6.3 6.3 6.3</td>
<td>38</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Advisory statement for wrong answer</td>
<td>2 13 9 11 2 38</td>
<td>6.3 6.3 6.3 6.3 6.3 6.3</td>
<td>38</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Learning contents of question</td>
<td>23 1 6 3 2 38</td>
<td>6.3 6.3 6.3 6.3 6.3 6.3</td>
<td>38</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Originality of question</td>
<td>1 1 1 7 8 38</td>
<td>6.3 6.3 6.3 6.3 6.3 6.3</td>
<td>38</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Helpful for learners</td>
<td>2 7 7 7 5 38 4 38</td>
<td>6.3 6.3 6.3 6.3 6.3 6.3</td>
<td>38</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>38 38 38 38 38 38 228</td>
<td>38 38 38 38 38 38 38 228</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Difficulty level of question</td>
<td>-2.5 -2.1 -1.1 -0.8 -3.2 -1.7</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Option of question (Wrong answer)</td>
<td>-2.1 -3.7 2.2 -1.1 -3.0 -3.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Advisory statement for wrong answer</td>
<td>-2.1 -3.2 1.3 -2.2 -2.1 -2.5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Learning contents of question</td>
<td>-7.9 -2.5 -2.5 -2.5 -2.1 -1.6</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Originality of question</td>
<td>-2.5 -2.5 -2.5 -0.8 -6.5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Helpful for learners</td>
<td>-2.1 0.3 0.3 0.8 3.2 -1.5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**: p < .01 ; *: p < .05

### 3.4 Questions posed

In question-posing activities, students were instructed to pose more than one question. The respective numbers of questions related to arrays and functions were 40 and 43. Table 6 presents the numbers of questions in descending order. Students posed questions about what they understood themselves. Table 5 shows items with higher priorities in question-posing activities. The students tend toward making a quiz that includes contents that they regard as important and which includes contents for which it is easy to make a mistake rather than what they learned, options, and advice for erroneous answers.

In array-related questions, many grammatical matters were addressed, such as the expression of an index and range of index. Furthermore, questions arose about the relation between repetition processing and array indexes, and tips for setting a provisional maximum when finding the maximum in array elements. These confirmed students’ grammatical understanding.
that an index starts from 0 in an array of C-language and that one might make a mistake of substituting a value for an array element with unallowable index. Furthermore, they seemed to understand repetition processing using an array and setting a provisional maximum when finding a maximum in array elements.

Among the function-related questions, some were related to expression of function, return sentence, and function prototype declaration. These confirmed students’ understanding of grammatical items such as the form of function, the number and type of actual and provisional arguments, and calling functions with and without arguments. Consequently, the questions they posed suggested their understanding of fundamental items such as grammatical knowledge of C-language they learned in the classroom and tips for finding a maximum.

In addition, in the question-posing activities using a textbook, questions were expressed easily as students found sections for making questions in their textbooks. The authors limited the numbers of blanks for each multiple choice question to three. Therefore, no questions were beyond our understanding or lacking definite flow of logic originating from too much blanks.

### Table 6. Contents of questions that students posed

<table>
<thead>
<tr>
<th>Contents of questions</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>expression of array element (index, data storage, and others)</td>
<td>20</td>
</tr>
<tr>
<td>array declaration (size, type, and others)</td>
<td>16</td>
</tr>
<tr>
<td>loop and index of array</td>
<td>10</td>
</tr>
<tr>
<td>#define statement</td>
<td>9</td>
</tr>
<tr>
<td>initialization of array</td>
<td>4</td>
</tr>
<tr>
<td>providing tentative maximum in problem of finding maximum</td>
<td>4</td>
</tr>
<tr>
<td>describing function (no argument, no return value, and others)</td>
<td>25</td>
</tr>
<tr>
<td>return statement and return value</td>
<td>16</td>
</tr>
<tr>
<td>prototype declaration of function</td>
<td>10</td>
</tr>
<tr>
<td>calling function</td>
<td>8</td>
</tr>
<tr>
<td>describing dummy argument</td>
<td>5</td>
</tr>
<tr>
<td>dummy argument and actual argument</td>
<td>5</td>
</tr>
<tr>
<td>array argument</td>
<td>3</td>
</tr>
<tr>
<td>flow of processing</td>
<td>2</td>
</tr>
<tr>
<td>change of variable on memory</td>
<td>1</td>
</tr>
<tr>
<td>story problem about merit of function</td>
<td>1</td>
</tr>
</tbody>
</table>

### 4. Conclusions

Free question-posing activities entailed the shortcoming of providing students with a feeling of difficulty and reducing their motivation for learning. Therefore, the authors practiced question-posing activities using a textbook. In conclusion, the authors found the following from results of this study.

1. Results of a questionnaire survey about question-posing and evaluation activities demonstrated that question-posing using a textbook reduced difficulties of posing questions and increased motivation for learning.
2. Results of a questionnaire survey about question-posing and evaluation activities indicated that question-posing using a textbook worked better as a review of what they learned than merely answering questions.
3. Opinions submitted by free description about question-posing and evaluation activities suggested that no student felt anxiety of posing erroneous questions in question-posing using a textbook.
4. Investigation of prior items in question-posing using a textbook revealed that top priority was assigned to what they had learned, as was true as well in academic year 2012, but the second priority was assigned to options (erroneous answers) and advice related to them.
5. Questions posed by students demonstrated their good understanding of programming languages and the fundamental information that they learned in the classroom.

As one means of improving their comprehension, the authors intend to reinforce their knowledge by asking them to rearrange what they have learned before beginning question-posing activities.
Acknowledgments

This study was partially supported by Grants-in-Aid from the Ministry of Education, Culture, Sports, Science and Technology for Scientific Research (C) (Nos. 22500955, 25350371).

References

Early Childhood Education Reform in Occupied Japan: An Analysis of CI&E Records, 1950-1951

Early Childhood Education

Poster Session

The purpose of this study is to clarify how CI&E (the section of GHQ/SCAP which mainly directed education reform) participated in early childhood education (ECE) reform in occupied Japan. To achieve this goal, this study analyzed Conference Reports and Weekly Reports of CI&E. The result indicated that (1) who worked on ECE reform in CI&E, (2) what were main points of argument concerning ECE, (3) how CI&E influenced on ECE Reform in post-war Japan.

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Early Childhood Education Reform in Occupied Japan:

An Analysis of CI&E Records, 1950-1951

Nozomi ODA

The purpose of this study is to clarify how CI&E (Civil Information and Education Section: the section of GHQ/SCAP which mainly directed education reform) participated in early childhood education (ECE) reform in occupied Japan after the World War II. To achieve this goal, this study analyzed Conference Reports and Weekly Reports of CI&E.

The result indicated as follows. (1) 5 members of CI&E: Helen Heffernan, Ruth G. Strickland, Pauline Jeidy, Robert R. Ewerz and Edna V. Ambrose, worked on ECE reform. (2) Main points of argument in CI&E concerning ECE were efforts to improve educational contents and techniques for kindergarten, which were initiated by Japanese Ministry of Education or CI&E after 1950. (3) CI&E have had a great influence on ECE reform at first, however, the influence of CI&E reduced gradually during 1951.
**Hawaii International Conference on Education**

Create a detailed title page for your submission. The title page must include:

a. **title of the submission (be sure to proper capitalization)**

*Origami* and Shape-configuration play for 2 to 3 year old children. *Origami* as a teaching aid and medium to develop a child's spatial awareness and ability to configure shapes.

b. **topic area of the submission**

Early Childhood Education

c. **presentation format**

Poster Session

d. **a 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 in addition to this description.**

**Description**

Research purpose: To utilize the ancient art of *origami* as a teaching aid/medium to develop a child's spatial awareness and ability to configure shapes. The children made different shape configurations through play. The results showed that 2/3 year olds were able to create point-symmetric shapes. They also experimented, using *origami* techniques, with folding the paper into line-symmetric shapes through a form of play, wherein the child formed and created new shapes using his/her own methods.
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Abstract

[Background] *Origami* is a simple process, which allows a variety of shapes to be created through folds and various plane compositions. *Origami* has a rich cultural heritage and art form that has been passed down through the generations, since ancient times. The more simple regularity and orderliness the shapes have, the freer a creative activity can develop (Waku, 2007). Through the giving of freedom and space, the child can establish his/her own unique way of enjoying and playing with this medium, which fosters creativity in the child (Akita, 2000). *Origami* enables the child to exercise diverse connections and to apply their own ingenuity from combining simple shapes to configuring simple forms, which in turn leads to the configuration of more complex shapes on the whole. This kind of *origami* seems to arouse the intellectual curiosity of children, deepen their ability to configure shapes and develop their spatial awareness, which results in an increase of opportunities to play and use their imagination.

[Objective] This study treated *origami* like pieces of a puzzle, by creating simple and regular *origami* forms, which required folds into point-symmetric shapes (parallelograms) and other folds into line-symmetric shapes (isosceles triangles). The purpose of this research was to examine how access to an existing tradition of *origami*, as a teaching aid and medium, could be used to teach configuration of shapes and create spatial awareness through child’s play and practice.

[Methods] Observational research was conducted on 20 infant subjects aged between 32 and 44 months of age, attending math and science classes at a certified nursery school. Furthermore, analyses were conducted on observation data collected on the basis of photography and field notes.

[Results] First we prepared two types of *origami* figures; namely, *origami* folded into point-symmetric shapes (parallelograms) and *origami* folded into line-symmetric shapes (isosceles triangles). We then examined the way in which the 2 to 3 year old children played with these figures. The results were broadly classified into 3 patterns:

1. movement constitution type, where both figures were used in an existing state and then joined to create a new shape (e.g. railway tracks, swords);
2. insertion type, where the *origami* was folded and sandwiched between pieces of paper to create a particular shape (e.g. shark, sandwich);
3. transformation type, where the origami was opened out and the shape was reinvented by additional folding (e.g. rocket, ring).
In addition, the study of different types of play, based on the differences in the origami figures, revealed variations in the way in which the play unfolded. Children enjoyed playing with parallelogram-shaped origami by inserting one origami shape into another to create a new shape. Many of the children also played with the origami by opening it out and creating a brand-new shape. In contrast with the isosceles triangle-shaped origami, many of the subjects folded down the corners and created a rectangular shape, or enjoyed playing with the isosceles triangle-shaped origami by standing them upright.

Next, we investigated the difference in the number of pieces used and difference in development of play by different ages. The results were that the lower the age, the fewer pieces they played with, and they connected the pieces using their unchanged forms. As the age increased, it was seen that they developed from playing with many pieces to connecting them using their unchanged forms and by inserting a few pieces through playing, and by modifying a few pieces.

【Conclusions】Play using origami, which folds paper into a few simple shapes, led to varying levels of play consistent with the child’s developmental stage and interest. It was also shown to arouse the intellectual curiosity of children, deepen their ability to configure shapes, expand their spatial awareness, and result in an increase of opportunities to play with their imaginations. It can be said that by using a teaching aid and medium that allows children to be involved in their own way, then the children themselves will know the characteristics and commonalities held by those objects and through their own experience will be able to use those objects creatively.

In the future, by further increasing the shapes with simple regularity and verifying, we believe that there will be possibilities of engaging creative play to develop the ability to configure shapes and spatial awareness, which will expand limitlessly.
1. Title of the submission: Effective Incorporation of E-learning into University ESL Courses

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Mao Naito
Sanae Narita

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Effective Incorporation of E-learning into University ESL Courses

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Abstract. There is a growing trend in the use of e-learning technology for the support of learning and teaching in universities worldwide. At St. Marianna University School of Medicine in Japan, E-learning was incorporated into ESL courses for first- and second-year students in 2013. E-learning materials are mainly used to supplement in-class activities and to build academic vocabulary as well as to learn medical vocabulary. In our paper, we will illustrate how E-learning has been effectively incorporated into ESL courses at our university. Our paper includes discussion of (1) computer resources to set up an E-learning platform, (2) useful softwares to develop e-learning materials, (3) effective use of online forums to exchange messages and ideas, and (4) grading methods.

English Program at St. Marianna University School of Medicine. St. Marianna University School of Medicine is a private university which offers an undergraduate program in Medicine. The program lasts for six years. English courses at the university are within the structure of General Education which becomes an integral part of the overall educational experience. English is a required course for students from the first- to fourth-year. The first- and second-year students attend two English classes per week. The Wednesday class and the Friday class are instructed by different native Japanese instructors. The third- and fourth-year students attend one English class per week. There are approximately 115 students each year. The class size is between 25 and 30 students in each of the classes.
The major objective of the first- and second-year English program is to serve the needs of medical students—developing academic English: English for Medicine and Bioscience. In the Wednesday class, the primary focuses are to develop general reading skills, grammar, and academic vocabulary. A textbook is used which covers excerpts from newspaper, magazines and journal articles. The students are required to submit assignments, such as outlines and summaries on an almost weekly basis. The instructors provide comments and feedback on them. In the Friday class, the content is more about the students’ specialty: Medicine. With the use of an illustrated guide as a textbook, students learn medical terminology in the major fields of medicine, such as the digestive system, the cardiovascular system, the urinary system, as well as the blood and immunity. Most of the reading materials used in class are clinical case studies, such as short stories from ‘Vital Signs,’ a popular column featured in Discover Magazine (Powell, 1980-).

**Incorporation of E-learning into English Program.** St. Marianna’s English program adopted Moodle, a free software platform and a learning management system. Students and instructors can access the Moodle page at [http://moodle.marianna-u.ac.jp/moodle/](http://moodle.marianna-u.ac.jp/moodle/) either from the university campus, at home, or anywhere where internet is available. The English program was not the first course to start using Moodle at the university. A course in Life Science used Moodle as a tool to provide supplemental learning resources, and a course in Physics was using Moodle to conduct a course evaluation in 2012. Neither of these two courses is using Moodle any longer. As of 2013, only the English program is using Moodle at the university.

When registered users login to the Moodle site, they are directed to the Moodle portal ‘course listing’ page. There are five course pages for the English program—two pages for first year English (one page for the Fall semester and the other for Spring semester), two
pages for second year English (Fall and Spring semesters), and one page for the advanced English course.

At the top of each course page (See Figure 1), there is a ‘Course Information & Resources’ section in which course syllabi, class schedules, study guides, in-class worksheets and writing pads (to be used when submitting assignments) are available for download.

Followed by the ‘Course Information & Resources’ section, there are online exercises and additional resource sections which are separated by weekly or bi-weekly units, depending on the quiz schedule. The students are encouraged to complete all the exercises in the unit following the course schedule. They are allowed to go back to previous units to review exercises, or they can go ahead and work on the next units early. They can even skip exercises and move on to exercises they wish to do. They are free to do the exercises as many times as they want. The number of students’ attempts and the scores of each of their
attempts are recorded and accessible to the instructors. When a student gives up in the middle and closes the exercise page, the student’s record reads as ‘abandoned’.

Most of the exercises are made with the use of the software *Hot Potatoes*. *Hot Potatoes* is a suite of programs published by Victoria University and Half-Baked Software. It includes six applications, enabling users to create interactive multiple-choice, short-answer, jumbled-sentence, crossword, matching/ordering and gap-fill exercises for the World Wide Web.
Online exercises of the English course can be divided into two categories: (1) exercises which deal with in-class content, and (2) exercises which deal with out-of-class ‘self-study’ content. These two types are summarized in Table 1.

The goal of exercises of the in-class content is to assist students to understand the class materials more deeply. The Wednesday class exercises include vocabulary review (Figure 2), class review, for example, fill-in-the-blank comprehension exercises (Figure 3), and multiple choice questions to choose the best ending for each paragraph when students learn paragraph patterns in class (Figure 4).
p120: Exercise 10: Read these sentences from the passage in Exercise B. For each underlined word or phrase, choose the one that is closest in meaning.

Not all insects, weeds, and other living organisms require control. Many organisms are innocuous, and some are even beneficial.

A. ? harmful
B. ? helpful
C. ? alive

Figure 2: Exercises of vocabulary review (Jeffries & Mikulecky, 2014: 186)

Exercise 4 (p128-129)

Complete the passage with words from the box. Change the word to fit the sentence.

Yesterday the police arrested two men in Arizona who were ______ illegal activities and disorderly behavior. The Chief of Police said the police had been planning the ______ for months. The arrest followed an attack on a teacher who was ______ in the face and pushed to the ground. The two men are U.S. citizens and have no criminal record, but they are known in the state for their extreme views. They are ______ members of an organization that aims to make all languages except English illegal in the U.S. The Arizona ______ of this organization became well known to teachers and parents last winter. The two men led a ______ effort to influence state school programming using questionable methods, including offers of money. In a ______ read by their lawyer, the men say they were only ______ orders given by other people in the organization.

Figure 3: Fill-in-the-blank comprehension exercises (Jeffries & Mikulecky, 2012: 128-129)
The Friday class exercises include cross-word puzzles to review medical terminology (Figure 5), definition matching exercises (Figure 6), fill-in-the-blank exercises to learn roots and combining forms (Figure 7), multiple choice questions to choose corresponding definition or translation (Figure 8), review of the digestive system (Figure 9) and so forth.

Figure 4: Multiple choice questions to choose the best ending for each paragraph (Jeffries & Mikulecky, 2012: 161)

Figure 5: A cross-word puzzles to review medical terminology
Figure 6: Definition matching exercises (Cohen & DePetris, 2011: 157, 161, 162, 164)

Figure 7: Fill-in-the-blank exercises to learn roots and combining forms (Cohen & DePetris, 2014: 225)
Chapter 13. Urinary System

Figure 8: Multiple choice questions to choose corresponding English translation

Figure 9: Review of the digestive system
The grading methods employed for all the exercises of in-class content are midterm and final examinations and regular observation of students’ online activities. The final grade of the English course is determined based on the following categories: (1) final examinations 70%, (2) midterm examinations 15%, and (3) quizzes, assignments and class participation 15%. As shown in Table 1, exercises of in-class content are not covered in the weekly quizzes. However, they are covered in midterm and final examinations. Students’ online activities are periodically observed and recorded by instructors. Their activities are not calculated into their grade, but are taken into consideration when determining their final grade. When observing students’ activities, instructors check to see whether the students have completed the assigned exercises at least once. Their scores and the number of attempts are not taken into consideration. The students whose Moodle performance is notably bad are asked to come to talk with instructors a few times a year.

Exercises are not the only tools in Moodle. There are worksheets of lists of selected terminology from each chapter of the Medical Terminology textbook. Students are advised to print out the lists at home and bring them to class to work on the definitions, Japanese translations and relevant combining forms in-class. There are also audio files with which students can practice pronunciation of common medical terms. Japanese students of medicine often find it difficult to pronounce specialized words in medicine, many of which originate from Latin and Greek. The audio files are edited by instructors; a short pause is inserted between each medical term so that students can carefully listen to each word and say the word aloud following the recording.

Online exercises of out-of-class content have two objectives: to develop general study skills and to build vocabulary. Around the beginning of the first year, many of the exercises are designed to increase basic learning skills, such as learning to use monolingual dictionaries, and understanding such concepts as ‘part of speech’ and ‘word derivation’. These exercises
help assist students to learn how to study English independently during the English course. Useful links, such as dictionaries and grammar references are also provided in the web page. An example of part of speech exercises is shown in Figure 10.

![Part of speech exercises](image)

**Figure 10: Part of speech exercises (Jeffries & Mikulecky, 2012: 39)**

Once the basic skills are acquired, most exercises are devoted to vocabulary building, specifically focusing on words from the Academic Word List (AWL) (Coxhead, 2000). The words in the AWL are important for anyone using English for academic purposes. About 12-15 word families from the AWL are selected as target vocabulary every week, and the goal is to learn a total of 570 word families from the AWL in two years. Examples of exercises include synonym matching questions (Figure 11), fill-in-the-blanks to choose a word and change it to fit the sentence if necessary (Figure 12), collocation exercises (Figure 13), preposition exercises (Figure 14), word family exercises (Figure 15), a word family table (Figure 16), and reading comprehension exercises (Figure 17).
Figure 11: Synonym matching questions

The feedback will be used to modify the course for next year.

A. ? retake
B. ? evaluate
C. ? adapt

Figure 12: Fill-in-the-blanks to choose a word and change it to fit the sentence if necessary (Jeffries & Mikulecky, 2012: 89)
**Figure 13: Collocation exercises**

**Figure 14: Preposition exercises (Jeffries & Mikulecky, 2012: 44)**
Figure 15: Word family exercises

Figure 16: A word family table
Students’ vocabulary mastery is assessed by weekly quizzes at the beginning of Wednesday classes, midterm and final examinations. The word family tables and reading comprehension exercises are optional. These exercises are not covered in quizzes and examinations. However, the students’ online activities of all the exercises are periodically observed by instructors.

‘Instructors Only’ Page. An ‘Instructors Only’ page was created during the second semester after online learning was incorporated into the English program. The page is accessible only by instructors from the St. Marianna University E-Learning portal page. It includes students name lists, seating charts of a classroom, course syllabi, reading materials, quizzes, worksheets, audio files, sample answers to problems in the textbooks, and so on.
This page enables instructors to obtain and share class information and resources. Also, instructors can exchange ideas and comments on quiz drafts and class worksheets.

**Conclusion.** In this paper, we have discussed how E-learning has been incorporated into the first and second year ESL courses at the university. We have discussed *Moodle* as an E-learning platform, *Hot Potatoes* as useful software to develop E-learning materials, and grading methods. A major challenge for now is to increase students’ participation. One possible solution is to modify the grading methods. The students’ activities could be related to the number of grading methods employed for the exercise. It is possible that more students would do the exercises if more exercises were covered by weekly quizzes as well as midterm and final examinations. Another solution is to improve the quality of the exercises in a way that would be more attractive to the students. In the future, we are trying to include such materials as video scripts and audio-visual aids. We can also improve the feedback systems so that students can get appropriate feedback while doing the exercises. Finally, compatibility problem must be solved. Some of the *Moodle* exercises do not appear properly on smartphones such as iPhones and Android devices. It has been nearly two years since St. Marianna University adopted E-learning. Overall, in spite of the problems discussed above, E-learning has brought about positive change in the English program.
References.


Paper Submission for the 13th Annual Hawaii International Conference on Education

Title of the Submission: “Third Space Pedagogy? Using foreign-born racial identity perspectives to inform professional practice in adult and higher education.”

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Paper Abstract (Work in Progress)  
In this collaborative autoethnography, four foreign-born doctoral students examine the processes through which they have come to define their racio-ethnic identities in a racially normalized U.S context, and the ways in which these self-definitions have potentially shaped their pedagogical approach as emerging scholars in adult and higher education fields.
Overview & Problem Statement

Foreign-born graduate students in the United States are a rapidly growing population, with over 180,000 currently enrolled (Ruiz, 2013). Yet, these students are frequently challenged in the process of negotiating learning environments that are culturally different from their own and tend to experience a sense of isolation, subtle discrimination and associated stress (de Araujo, 2011). These challenges are further complicated by instances during which they struggle to identify with race and its related issues, as shaped by a racialized United States context (De Walt, 2013; Murray-Johnson, 2013). As scholars have found, since many foreign born students usually arrive with well-formed cultural/ethnic identities shaped by their home countries rather than conventional United States attitudes regarding “racial” difference, their racial self-definitions, perspectives or experiences are often incongruent with that of U.S born students (Alfred, 2003; Fries-Britt et al., 2014; Rarrett and Roediger 1997; Wilson, 2009). In addition to this, research involving race-based categories often subsume both foreign born students within the larger category of American students.

Despite a growing awareness of these challenges, few studies have focused on processes surrounding how foreign born students self-define racially in a U.S. context and to the authors’ knowledge, no published studies have yet to explore how their racial self-definitions might potentially influence their future practice in education. Understanding ‘racio-ethnic’ socialization is crucial since racio-ethnic identity is “a buffer and cultural filter” used to negotiate environments affecting people’s lives (Vontress, 2003, p. 4). In adult education settings, race is an ever present variable that affects teaching and learning in multiple ways (Baumgartner & Johnson-Bailey, 2010). As such, there is urgent need for a more nuanced understanding of foreign born racial identities and perspectives. Adult and higher education needs to develop an awareness of the effect of foreign-born students’ own “racial and ethnic definition of self, of learning, and of education” (Chavez & Guido-DiBrito, 1999, p. 44).

An exploration of how foreign born students identify is critical in understanding the experiences of a diverse pool of students in academe. Expanding this kind of discourse is useful in presenting counter narratives that are reflective of the increasingly diverse adult immigrant population in adult and higher education settings. It is also important in helping create and sustain campus climates that are truly supportive of diversity.

Purpose of the Proposed Study

The purpose of this research study (work in progress) is to examine the processes through which four foreign born doctoral students have come to self-define in a racially normalized U.S context, and the ways in which these self-definitions potentially shape their pedagogical approach as emerging scholars in adult and higher education fields. The overarching research questions will be: How do racially diverse foreign born doctoral students self-define in the context of a racially normalized U.S society? How do these emerging scholars see their racial/ethnic self-definitions impacting their pedagogical approach in adult and higher education settings?

Methodology

We employed autoethnographic methods in this study. Autoethnography may be defined as the study of self in relation to others within a particular social setting (Chang, 2008; Ellis, 2004). According to Ellis and Bochner (2004), the process may be described or broken down into three components: auto (self), ethno (culture), graphy (research process). As such, auto ethnographers can emphasize one element or the other in their work element, so that emphasis on self, for example may result in a more autobiographic work, while more of a focus on providing
a cultural interpretation of events that involve the self, may result in a more analytical work (Ngunjiri, Hernandez, Chang, 2010). For this study, we lean more towards the analytical. This study first began as informal communications with all four authors in their roles as doctoral students (three being employed peers as doctoral research assistants). All four are female migrants to the United States from Jamaica, Ukraine, Brazil and Nigeria respectively - and all arrived in the U.S during adulthood, in order to pursue tertiary level education. Later, as an extension of our relationship as colleagues and peers, we agreed to formalize our experiences and communications into a formal research study, with a particular emphasis on adult and higher education, fields within which we aim to engage in professional practice. Concerning racial positionality, two author-participants are Black and two are White.

Data collection strategies will include: (a) independent interrogations of our identities as Black and White women in the US academy by way of a completed culture gram - a visual organizer for mapping out one’s primary identities (Chang, 2008), responses to critical incident journals, focus groups and semi-structured interviews. To frame the study, we will use postcolonial theory (Bhabha, 1994) and social identity theory (Tajfel, 1978). Postcolonial scholarship is particularly relevant given its emphasis on the notion of a “third space” where identities are [re]constructed and negotiated in the face of ambiguity – a space both in-between and co-mingling (English, 2002, 2005). This is a space within which the authors of this study wrestle daily as they [re]negotiate pedagogical approaches and self-definitions in the U.S context. Social identity theory can be used to describe the self-structure of individuals, as they are defined by the relationship of the individual to the broader social structure; the self then is constructed in and dependent upon the social context (Deaux, 2000). As female adult migrants that have arrived the United States in the pursuit of our academic goals, our sense of self has been greatly informed by our life experiences in both U.S and ‘home’ societies. For data analysis and interpretation, we will draw on Glaser and Strauss’ (1967) constant comparative method.

Discussion of Expected Outcomes

We anticipate a rich set of themes to emerge from this study. Based on our initial communications, it is clear that shared commonalities will include, among others, consistent experiences with tensions as it relates to our racio-ethnic identities and how we negotiate these in diverse environments, a strong sense of “hybrid consciousness” (Analzua, 1987), where our identities are dual, fluid and complex, rather than fixed in a U.S context. Given that two participants were socialized in a majority culture and are now being [re]socialized as minorities in their current context, there is strong potential for divergent themes to emerge in comparing data from Black participants with data from White participants (who appear to remain in ‘majority culture’ status, albeit in a different way). Divergent themes may also emerge as we analyze our experiences in light of how other positionalities (e.g. female gender) might intersect with racio-ethnicity.

This study will grant unique insight into racial identity perspectives and experiences of participants that represent the two most dominant racial categories in the U.S – Blacks and Whites; along with unearthing nuanced racial identities, it will shed light on how dual lenses from dual socialization experiences might inform teaching and/or learning practices in adult and higher education settings. Given that a growing immigrant population is challenging the very conception of race (Brooks & Clunis, 2007; Johnston, 2013), studies like these are particularly meaningful for adding dimension to culture – based adult learning theories and promoting pedagogic and faculty development practices in the academy that are truly culturally responsive.
TITLE: Effective Strategies for Leading Urban School Districts  
TOPIC AREA: Education Policy and Leadership  
PRESENTATION FORMAT: Workshop  

DESCRIPTION:
The educational plight of high school graduation is a matter of national imperative for African American males. Participants in this session will receive effective strategies that work with the African American male population, K-12, in an urban school district. One key focus will be mentoring that leads to academic successes as well as lifelong coping skills when facing obstacles. Participants will receive theoretical information as well as practical application strategies used by leaders.

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ABSTRACT
The successful achievement of students lead to a successful pathway to graduation. The educational plight of high school graduation is a matter of national imperative for African American males; school systems must address the role of the principal in promoting graduation. With the demand on school systems to perform in a politically driven, assessment-based paradigm, there is a need to describe, analyze, and compare the specific strategies that principals utilize to ensure academic success for African American males and explain how the belief about their abilities contribute to African American male graduation. 
Factors tied to high school graduation of African American males are important to families, communities, school districts, and society. Through the acquisition of a high school diploma, these factors enable the African American male to contribute to the progress of society by modeling the importance of education, reducing recidivism, increasing the opportunity for college access, and increasing earning potential. This qualitative case study examined the self-efficacy beliefs of three high school principals in economically disadvantaged high schools with consistently high graduation rates for African American males. This study described the perception of each principal’s self-efficacy beliefs regarding African American male academic achievement and graduation. Additionally, it described the successful strategies and policies implemented.

Using a race-based epistemological approach served as an important analytic lens and allowed the researcher to challenge dominant ideology and provide a space for insider accounts of their experiences. Qualitative methods
were linked to a constructivist theory of knowledge because qualitative methods tend to focus on understanding experiences from the point of view of those who live them. Purposeful sampling was used to ensure that the participants selected could provide the detailed information needed for rich case studies. While preliminary and primary interviews were the main source of collecting data, several documents also were collected and examined. Amongst the three cases, the researcher used within-case analysis followed by cross-case analysis.

The four identified core themes were student supports, policy implementation, teacher training, and data-based decision making. Each subtheme reflected the participants’ perceptions of their ability as a principal to structure a particular course of action regarding African American male graduation success. Within the student supports core theme were the subthemes of leadership continuity, relationships, and specified strategies. Within the policy implementation core theme were the subthemes of culture and climate, early intervention, and hiring. Within the teacher training core theme were the subthemes of rapport and curriculum. Within the data core theme were the subthemes of community partnerships, taking action, and communication. The findings from this study suggest that the three principals in economically disadvantaged high schools with consistently high graduation rates for African American males who participated in this study had a strong belief in their ability to evoke change, understood the needs of African American male students, and implemented strategic plans of action.
Title of Submission: Examining Culturally Responsive Pedagogy in Adult Education: An Integrative Literature Review

Topic Area: Adult Education

Presentation Format: Paper Session (Student Paper)

Description: This student paper is an integrative literature review that explores how culturally responsive pedagogy (CRP) as an approach has worked over time in facilitating adult learners of color. Findings indicate that though CRP has had positive influences such as increasing some learners’ tolerance for and awareness of diversity, challenges remain that suggest multiple potential opportunities for [re]defining CRP in research, applying it to classroom practice and including it as a central policy initiative in adult education settings.

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Paper Abstract

Overview and Statement of the Problem
Much has been written on culturally responsive pedagogy (CRP) and its application in K-12 classrooms, given the increasing presence of ethnically diverse students in the United States (Banks, 1999; Banks & Banks, 2004; Gay, 2000). With regard to adult and higher education settings, a large portion of the research on CRP surrounds teacher preparation programs, but with the diversity also on the rise in varied adult learning contexts, more nuanced understandings of how CRP may be applied is needed. As noted by Carter-Jenkins and Alfred (2011), “although some practitioners prescribe culturally relevant pedagogy as an approach to making teaching and learning more relevant to people of color, there is a limited amount of data to inform practices in higher education.”

Purpose of the Study
The purpose of this student paper was to examine research studies within the field of adult education that focus on the use of culturally responsive teaching approaches in facilitating adult learners of color. This was with a view to (a) obtaining a greater understanding of how these approaches have worked over time and (b) outlining implications for the way forward as it relates to CRP in adult education – a field historically rooted in social justice and democratic practice (Kasworm, Rose & Ross-Gordon, 2010). Consequently, the study’s core research question is what does the literature tell us about culturally responsive pedagogy in adult education settings that are culturally diverse?

Methodology
I utilized an integrative literature review to conduct my research. This involves reviewing, critiquing, and synthesizing relevant literature in order to come to a new understanding of the given topic (Torraco, 2005). As CRP is often used interchangeably with other terms (Harmon, 2009), I used the keyword search terms “culturally responsive pedagogy and adult learning/education”, “culturally responsive andragogy and adult learning/education and multiculturalism and adult education” to narrow my search. Works published in higher education journals (with a focus on non-traditional adults) and three leading adult education journals were examined.

Discussion of Outcomes
Four findings emerged from the review. First, though the literature indicates that the intentional application of culturally responsive approaches has yielded success with some adult learners of color, it outlines that more studies should be done to determine how CRP might impact a greater variation of ethnicities. Second, there is a need for clearer distinctions in discussions of multiple concepts that are closely related to CRP. Third, there are little or no research studies dedicated solely to determining a student perspective on the effects of a culturally relevant approach to teaching – particularly over time. Fourth, there remained a noticeable absence of empirical work on culturally responsive approaches for facilitating immigrants or foreign born adult learners. Findings from the study suggest multiple potential opportunities for [re]defining CRP in research, and successfully applying it to classroom practice in diverse adult education settings.
1. Title of the submission
What should Japanese University Students be Taught to Improve Their English Oral Presentations?

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6. Abstract
The “English Presentation” course was designed primarily to improve students’ presentation skills and thereby their vocabulary, reading, writing, listening and speaking skills as well, which should lead to the development of their integrative English language proficiency. The main goal was to acquire basic presentation skills, namely how to deliver (1) physical messages, (2) visual messages, and (3) story messages. This teaching included how to organize a presentation, how to narrow the focus of each topic, the effective use of visual aids, data and statistics, and aspects of delivery such as voice inflection, eye contact and gesture. First, the students wrote manuscripts based on the basic patterns of presentation, and then they further developed their skills to make longer presentations. In 15 lessons, they experienced two individual presentations and two group presentations. After the last individual presentation, which was a final test, the teacher told the students to reflect on their presentation and write about they could not do well. This report was analyzed using text mining, and it showed that 1.) students
felt that their skills in conveying both visual messages and story messages were successfully improved by the lessons, but 2.) they thought that conveying physical messages, especially by voice inflection, eye contact and gesture, was more difficult to improve. The possible reasons for this could be seen by using the word-netgraph of kCoder (free text mining software). According to the graph, it seemed that they spent too much time on making PowerPoint slides (visual messages) and manuscripts (story messages) and did not spend enough time practicing how to deliver physical messages. Thus, in the English presentation course for Japanese university students, teachers should stress how important the physical messages are in the presentation, and provide much more time to practice voice inflection, eye contact and gesture.
1. Title of the submission
A Comparative Research on the Metaphorical Competence between Japanese University Students Enrolled in a Study Abroad Program and Students not Enrolled

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6. Abstract
The notion of World Englishes (WE) is based on the premise that every English speaker has the right to use English in his/her own way, and that even non-native Englishes with differing structural and functional features should be treated equally to these native Englishes. Metaphors, which are frequently used in communication, usually originate from speakers’ mother tongues, so they are culture-colored expressions. This implies that metaphorical competence, which is the ability to use and understand such metaphorical expressions well, is a key to success in international communication in English. A subject matter of the study of SLA in recent years is the extent to which learners of an L2 learn how to manage the figurative speech that goes with the culture (Shirazi & Talezinezhad, 2013, p. 136); however, English teachers in Japan have not focused extensively on its importance. There are three possible reasons for this; first, these teachers often insist that using cultural expressions should be avoided for mutual intelligibility in international communication, second, they tend to believe that
metaphorical competence naturally increases when the learner’s English proficiency improves, and third, they think that exposure to varieties of English could spontaneously cultivate the learner’s metaphorical competence. But avoiding using cultural expressions is not realistic and also, some studies have shown that metaphorical competence can be developed in the classroom if learners are taught about the underlying cognitive mechanism (Cenoz & Jessner, 2000, p. 105). The present pilot study examined the metaphorical competence of Japanese learners of English. It compared the competence between two groups; (1) Japanese university students who participated in a one-year study abroad program in Boston, USA, and (2) students who had never been abroad. The results of a t-test assuming unequal variance showed that no significant difference existed between the groups. This indicates that exposure to varieties of English outside Japan, and improving English proficiency are not reliable ways to develop metaphorical competence. Thus, introducing teaching to improve learners’ metaphorical competence might be required in Japan in order to enrich their English international communication.
Quick Experiential Training Incorporated into Lectures to Improve Readiness for Mastering Skills of Blood Drawing

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Poster session: Abstract

【 Introduction 】
In Japan, instruction in injection and venipuncture methods generally consists of lectures and skills trainings in education of fundamental nursing skills. During skills training, nursing students listen to explanations of the procedure by the nursing teachers, watch their demonstration, and practice the procedure using a simulation model. Innovative instructional approaches are needed to help beginning students master nursing skills. In this report, we describe a quick experiential learning method that can be incorporated into classroom lectures with simple materials to improve the readiness for skills trainings.

【 Challenges in the mastering of techniques 】
Whether nursing students successfully performed blood drawing is evident by the presence or absence of simulated blood flow into the syringe. The reason for failure is usually penetration through the vein of the simulation model by needle. To be successful needs the technique that advancing needle into the model’s vein without penetrating posterior vein wall after needle has entered. But the technique is difficult for beginning students to master, which is frequently confirmed during instruction. Consequently, we devised the learning method in which students only practice inserting the needle into vein, which is considered a challenging step, during the lectures prior to the skills training.

【 Actual quick experiential training 】
We thought that the following are important conditions for enabling the incorporation of this quick experiential training experience into lectures: 1) nursing students can imagine the needle being inserted into and advancing needle parallel to vein, 2) the session requires only a short time, and 3) the materials used are simple and inexpensive.
The simulated blood vessels needed to be transparent so that the depth of insertion can be confirmed. Therefore, we selected inexpensive transparent straws (4.5 mm in diameter and 180 mm in length) that can be obtained in bulk. Opened but unused syringes and needles were used. During a 90-minute class, 15 minutes were assigned to the quick experiential training. The training proceeded in the following order, showing the demonstration through an overhead camera by one of nursing teachers.

1) Secure both ends of the transparent straw to the desk with tape.
2) Mark the insertion site on the surface of the straw with a marker.
3) Stretch the lower part of the straw with the non-dominant hand as if it were skin.
4) Insert the needle into the marked site with the dominant hand.
5) Without penetrating posterior wall of straw, advance the needle into the straw under visual confirmation.
6) Repeat with the same straw as many times as possible until time runs out.

We began to provide this quick experiential training from 2011.

【Results】

The quick experiential training was received well by nursing students almost every year because the 15-minute session was a good break for students during a long lecture and a good opportunity to handle actual syringes.

In 2014, we asked students to give their opinions on a voluntary basis. Ninety-nine students (95.2%) responded. Among them, 80% stated that they were able to imagine the movement of the needle and 61% and 22% stated that they succeeded on the first or second try and on the first try, respectively. However, many students answered that the surface of transparent straws is hard and slippery, which made insertion difficult, and that straws moved even when they were secured with tape. These problems might have affected their success or failure. The final evaluation of the students' technique by the nursing teachers showed that 95% of students mastered the skill of inserting a needle and advancing it into the model's vein.

【Conclusion】

Each nursing skill consists of a series of many steps. Even when beginning nursing students think that they understand a procedure after watching demonstrations by nursing teacher, in practice it is difficult to do the complicated series of actions. Our experiential training incorporated into lectures might contribute to success in the skills training for blood drawing or the rate of mastering the technique as determined in the final evaluation. We consider that the training useful for improving the students' readiness for the blood drawing training. In order to improve this training, we can design transparent substitutes for skin to cover the transparent straws so that students can imagine the needle also puncturing the skin before reaching the vein.
Presentation:

*Higher Education - and the Social Sciences in Between the Humanities and the Natural Sciences*

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**Abstract:**

This research project deals with specific disciplinary cultures of 'Bildung' [German term for general education] at German universities during the current period of European higher education reform – the Bologna Process. The paper will present the empirical research results from the years 2013/2014 on students’ understanding of 'Bildung' as well as their study strategies resulting from it in three disciplinary cultures: the Humanities, the Social Sciences, and the Natural Sciences. Based on a theoretical diagnosis of time, 'Bildung' is conceived as discourse (cf. Wimmer 2011, p. 39). This discourse looks different from disciplinary culture
to disciplinary culture. Snow (2012) stated in 1959 that the faculty of the Humanities on the one side and the faculty of the Natural Sciences on the other are working in the same institution, are both highly educated, and have a similar status but they do not understand each other very well – they do not even feel the same way (cf. Snow [1959] 2012, p. 4). The idea was to let students from different disciplines talk about ‘Bildung’ in order to find out what they emphasize about higher education and their idea of good education from the perspective of their disciplinary culture. The viewpoints from the Social Sciences students were especially interesting because they mark a perspective in between the liberal arts oriented Humanities one the one hand and the labor market oriented Natural Sciences on the other. Because of different capitals and resources of actors, it was necessary to include an analysis of their social origin, habitus and life-style in the research (cf. Bourdieu 1987, p. 405; Bourdieu 1992, p. 88; Burzan 2007, p.132). These facts not only apply for staff but also to students (cf. Lange-Vester/Teiwes-Kügler 2006, p. 57; Schölling 2005, p. 17).

To show the discourses and struggles in different subject cultures and the understanding of ‘Bildung’ resulting from it, the application of a Mixed Method Design with the Focus Group Method, a short Questionnaire and Semi-Structured Interviews was essential. With Focus Groups, an analysis of subject cultures (1st dimension) did not just collect the opinions of faulty members and sum them up. In addition census of the socio-demographic variables via short questionnaires enabled the inclusion of the social origin (2nd dimension) of the participants. By comparing transcriptions of the Focus Groups with socio-demographic variables, the understanding of the relationships between social origin, bio-graphical decisions (3rd dimension) in the education system, and specific understandings of ‘Bildung’ were possible. To analyze the impact of the higher education system on students’ understanding of ‘Bildung’ I observed the everyday university life of students and interviewed them (4th dimension) at an American university. In Germany, due to the fact that the history of the education debate stretches back 200 years, a more traditional concept of ‘Bildung’, understood as a more general education, exists among university members.

Empirical data was evaluated with the Documentary Method (cf. Bohnsack, Nohl, and Nentwig-Gesemmann 2007). This empirical research project takes place in a time of "harmonisation of the architecture of the European higher education system" (Sorbonne Declaration 1998) by the Bologna Process. The German and European-wide student protests in reaction to changes in the higher education system and struggles over the term of ‘Bildung’ in the last ten years underline the relevance of my research project. In this empirical analysis,
the protagonists of educational processes voice their opinions and their perspectives on the university attract broad attention.

References:


The mediating role of father’s Negative Self-efficacy on the relationship between Marital Conflict and Paternal Involvement in Parenting: Implications for Parent Education

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Abstract

In modern Korean society, the social expectations associated with the role of fathers were changed and these expectations – largely to do with increasing involvement in parenting – are translated into actual change of behavior. Many Korean fathers try to spend a lot of time participating in child-rearing these days, but by no means all and father’s actual involvement in parenting is depends on a variety of factors. Therefore, exploring these factors is needed to provide the effective support for their participation in parenting.

Considering the previous studies which revealed the positive impact of marital satisfaction on mother’s parental role, factors related to marital relation such as marital conflict can be dealt with as a main determinant of participation in child-rearing. So, a father who has good marital relations is expected to take more part in parenting like a mother’s case. Individual psychological characteristic such as self-efficacy also discussed in many studies as a significant factor promoting father’s participation in child-rearing. Then, what is relation between marital conflict and self-efficacy on father’s participation in child-rearing? There might be a mediating effect of negative self-efficacy on the relationship between other two variables.

The purpose of this study was to analyze mediating effect of father’s self-efficacy on the relationship between marital conflict and paternal involvement in parenting. The subject were 1618 fathers with preschoolers who participated in a survey of 2012 Panel Study on Korean Children(PSKC) conducted by Korea Institute of Child Care and Education(KICCE) and the analysis was performed by correlation analysis and structural equations model.

The results were as follows. First, there were a positive correlation between marital conflict and negative self-efficacy and a negative correlation between marital conflict and paternal involvement in parenting. Second, negative self-efficacy was a mediating variable on
the relationship between marital conflict and paternal involvement in parenting. Through these findings, we could better understand on a relation between father’s perceived marital conflict and paternal involvement and find that individual psychological characteristics such as self-efficacy have an indirect effect on the relationship between those two variables. The findings are discussed in terms of their implications for future parent education in the area of early childhood education especially for fathers.
Title: Learner Activity Data Collection in a MOOC: xAPI and Activity Theory Framework

Topic Area: Educational Technology

Presentation Format: Paper Session

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Introduction

The place of academia within society has reached new levels of scrutiny as state budgets continue to shrink and questions of value begin to arise. Research institutions may not be able to maintain their prioritization of intellectual freedom in an environment more concerned with value-added business metrics (Hoffman, 2013). Calls to focus on “emerging technology-based models that can make learning more efficient and possibly improve student support, all at lower cost for a broader range of learners” (Josephson, 2013, p.2) is one approach that may alleviate financial concerns. Massively Open Online Courses (MOOCs) are one specific technological and pedagogical approach that has seen a great deal of media exposure and high praise as an opportunity to impact the bottom line. However a number of problems still exist with MOOC implementation with considerable attention given to the high student attrition rate (Jordan, 2013; Koller, Ng, Do, & Chen, 2013).

While completion rates may not be an accurate metric of MOOC success, since many participants may have never intended to complete the instruction, the greater issue highlighted is how little we still know about MOOC participants. What are the experiences of MOOC students, their motivations, and how to best guide their experiences are only some of the questions that still require more in-depth research (Josephson, 2013)(Gašević, Kovanović, Joksimović & Siemens, n.d.). In order to explore this topic, it is critical to utilise common semantics (Mwanza & Engeström, 2005) and to collect user experience data in a method that is aligned with the pedagogical perspective taken in the learning environment (Lim, 2002). Since the authors utilize social constructivist theories; an ideology that proposes learning, action and context are intertwined, within their MOOC development it is important that data collected on the learner follows this ideology. This includes data collected not only on their interactions but that the information is also situated within a rich description of the context in which the activities occurred. Additionally, the nature of highly scalable instruction also necessitates a data collection protocol and framework that maximize automatic collection of contextual information with the ability to identify and target areas for deeper investigation later. Therefore, this proposed framework takes these many facets into consideration and is one potential method to conduct contextual learner activity data collection in a MOOC learning environment.

Framework

The framework consists of three critical components, a learning theory that provides a common language for describing constructivist-based learning, a data collection model designed with the same theory and a procedure to facilitate conversion of instructional design decisions to specific data collection events. Each element is described below.

Activity Theory
Activity theory is a socio-cultural framework that focuses on the learner’s “activity” as the unit of analysis. Each activity enables exploration of data at the individual student level while still maintaining context within a larger social interaction (Allen, 2011). Each activity consists of a subject, often a student, using tools to achieve a culminating object which can lead towards a larger student learning outcome (Kuutti, 1996). Rules, community and division of labor consist of the cultural and contextual elements that influenced and mediated the creation of the object while influencing the subject as seen in Figure 1.

![Activity System](image)

Activity theory was selected as the foundation for the framework due to its applied nature (Ponomarenko, 2004) and interventionist focus (Miettinen, 2006) which is consistent with the design-based research method applied by current MOOC researchers (Gašević et al., n.d.). Activity theory’s synergy with constructivist learning approaches (Jonassen & Land, 1999) also ensures a common language between a learning ideology and the description of specific instructional events. Finally, Activity Theory is primarily a descriptive theory which focuses on structuring and describing the context and elements that interacted in order to reach a final outcome. This will facilitate easier transition to the more descriptive learning analytics and educational data mining approaches recommended for MOOC research (Gašević et al., n.d.).

**Data Collection Model**

It is important to select a data collection model and protocol that is consistent with the constructivist ideology and with instructional events designed within the MOOC learning environment. The Experience API (xAPI) was selected due to Activity Theory’s heavy influence in its early development as well as its extreme malleability in regards to implementation. This provided a vocabulary that was similar to Angestrom’s Activity
Theory, enabled customization to define a clear research framework yet ultimately maintaining interoperability with other xAPI developers. Additionally, the xAPIs heavy adoption by current educational technology developers and learning management systems (“Adopters - Tin Can API,” n.d.) increased the possibility of transferability for any tools or implications that should result from iterative research with the proposed framework.

Translation Protocol

Similar to Activity Theory, the base unit of analysis within the xAPI is a single “activity” statement which comprises a minimum of an “Actor”, “Verb” and “Object”. This unit structure can be clearly connected to Activity Theory’s “Subject”, “Tool” and “Object” components fairly easily.

```json
{
    "actor": {
        "name": "Activity Theory Subject",
        "mbox": "mailto:sally@example.com"
    },
    "verb": {
        "id": "Description of the tool/process",
        "display": {
            "en-US": "experienced"
        }
    },
    "object": {
        "id": "Location of the object created",
        "definition": {
            "name": {
                "en-US": "Name of the object"
            }
        }
    },
    "context": {
        // Rules, Community and Division of Labor
    }
}
```

**Fig 2. Example xAPI statement with locations for Activity Theory related data**

However, Activity Theory’s additional components of “Community”, “Rules and Regulations” and “Division of Labor” are not so easily connected to the xAPI. While it is unclear why this design decision was made in the development of the xAPI, there is a potential location for this information to be stored within the “Context” portion of the activity data statement. Therefore, a simple process was created to ensure that instructional design decisions informed by constructivism and framed by Activity Theory could be clearly translated into the appropriate portions of the xAPI statement in a consistent fashion.

**Next Steps**
The framework was tested on a MOOC implemented by two of the authors in the summer of 2014. Analyzing the results for the improvement of the MOOC is currently being done and will be used to then evaluate the efficacy of the framework for research and to improve the next iteration of the MOOC. Instructional tools and data collection procedures used for the MOOC will be shared with the research community in hopes that it will aid other researchers exploring socio-cultural perspectives.
Bibliography


The Living Educational Philosophy of the Suzuki Method: The Ethos of the Suzuki Teachers’ Community Drawing on the Narrative Study

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The Living Educational Philosophy of the Suzuki Method;  
The Ethos of the Suzuki Teachers’ Community Drawing on the Narrative Study

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1. Introduction

1.1. Aim of Study

This study identifies the fundamental principle of the Suzuki Method by investigating Suzuki teachers’ current in-group ethos including sense of values, beliefs, and norms through analyzing their interviews.

Despite the enviable reputation that the Suzuki method has abroad, it is often mistakenly accused of mixing with special education in early childhood and considering itself as a heretical methodology, particularly in Japan. Criticism such as: misconception of regarding it as a special education for gifted children; burdensome family commitment; excessive weightage on group performances to the detriment of solo ones. This may lie on the fact that the contemporary pedagogical trend in education in general differs from the time when Suzuki introduced his method therefore it may be more difficult to understand its principles.

1.2. Ethos of Teachers

The ethos here signifies the sense of values, norms, and beliefs that underlie all educational activities. It is different from content and methodology although it includes and supports them. It is not merely a belief of an individual instructor but is internalized by the community of Suzuki teachers. This means that by examining their in-group ethos through their narratives, it is possible to display the current philosophy of education in the Suzuki method.

2. Research Background and Method

2.1. Problems Leading to Misconception about the Suzuki Method

The educational belief in the Suzuki method is ‘every child can’. This notion, however, is discussed separately from its pedagogical characteristics, leading to misunderstanding, heretical conceptualization, and overlooking its value. These criticisms arose based only on appearances of the Suzuki practices or teaching methods. However, the overt features do not represent the entire
educational practice that draws upon Suzuki’s educational philosophy. For clarifying the “lost” aspects of the Suzuki method and highlighting Suzuki’s living philosophy, narrative study of the teachers’ discourse is a plausible method.

Apart from the name, *Suzuki method*, its core cannot be considered as “a method” with specific instructional techniques and methodology.

### 2.2. Transition Across Borders

Although it is originally established in Japan, Shinichi Suzuki, the founder of the Suzuki method who pursued the universal principle of human education, aspired to permeate his belief to the world by localizing its shape according to cultural differences. This means that even though the formats are different, the essential principle should be the same.

This study, therefore, attempts to identify the in-group ethos of Suzuki teachers who adhere to the original notions of Shinichi Suzuki through analyzing interviews both in Japan and the USA. I interviewed teachers who were Suzuki’s first students as well as the ones who desire to inherit the ideas of these master teachers. By analyzing their narratives and by particularly paying attention to expressions representing the sense of values and norms as the origin of Suzuki’s initial belief, I will extract the common theme that expresses the ethos observed in teachers’ communities in both Japan and the USA.

### 2.3. The Essence of *Suzuki* Method Seen at Suzuki Institutes

The primary condition for interviewing teachers was that they had to be conscious of the original Suzuki method. Therefore, I chose summer schools for interviewing teachers. The Suzuki summer schools are primarily regarded as places for children to grow, but based on participant observation, they are also precious occasions for teachers’ reciprocal learning.

I chose a small summer school held in July 2013, in Aomori prefecture, Japan. Since it was an event especially planned by teachers who learned directly from Shinichi Suzuki, younger generations of teachers were eager to learn from those who had actually worked with Shinichi Suzuki.

In the United States, in August 2013, I chose the Japan-Seattle Summer Institute, one of the 60 summer schools authorized by the Suzuki Association of the Americas. This institute has been following the original Suzuki Summer School style, first held in 1988 in Kirigamine, Japan, where American teachers, who had experienced learning with Shinichi Suzuki, gather.
In both Aomori prefecture and Seattle, semi-structured interviews were conducted with individual teachers and groups of teachers. The interviews were recorded and transcribed for content analysis.

3. Thematic Analysis of the Qualitative Data

3.1. Interpretation of topics common to Japan and the United States

Through content analysis, I extracted from both Japanese and American interviews seven common topics representing the teachers’ values and norms.

1) Human education through music as an aim
2) Rejecting competitiveness
3) Significance of parents’ growth
4) Vision for a better society through music
5) Teachers as continuous inquirer
6) The desire for that which cannot be said, the ineffable
7) Shinichi Suzuki, a man who respected every person as a human being

Through the teachers’ narratives, each of these seven common topics was examined and interpreted. Numbers 1 to 4 relate to the principles of Suzuki education; numbers 5 to 7 involve the teachers’ being and growth.

3.2. Teachers’ values, norms, and beliefs about the Suzuki method

3.2.1. Human education through music as an aim

One may not fully comprehend when one first hears that the Suzuki method is oriented toward “character education through music.” This fundamental theme is repeated in Japan and the United States; for instance:

I think the spirit of the Suzuki method is “every child can.” But if you want to paraphrase it, let’s see, I think you would have to add “through music.” If only music had been taught, the Suzuki method would have not achieved its present stature.

This teacher has understood that the aim of education in the Suzuki method is that every child should grow into a noble human being by learning music.
Moreover, a teacher had said that the pursuit of a beautiful tone is the embodiment of the process of educating a human being, as follows:

Well, Dr. Suzuki had a saying that your tone reflects who you are, your heart inside which we call “a living soul”. So, when we work on tone, we are working on character development. So if the child is standing there playing (violin) and it is not good sound that could reflect that they are not yet aware or sensitive to what they are listening for.

The teacher interprets “beautiful tone” not as a mere consequence of good technique but rather as congruent with character education.

3.2.2. Rejecting competitiveness

One teacher in the U.S. recalls how she, a traditionally trained violinist, happened to become a Suzuki teacher.

I heard two teachers’ conversation. Reminding another teacher’s student who had been facing some technical challenges, a teacher asked, “Hi, how’s Johnny doing? Have you tried [a strategy] with him? It seemed to work well with my student Mary.” I thought to myself, “Wait a minute! A teacher giving away her secret for success? How generous, how kind, and how wonderful!” This way, everyone can improve, not just your own students! I realized there are huge differences in the spirit of education between Suzuki and what I had known before.

This teacher expresses how astounding the climate of the Suzuki method was for those who were trained in a traditional conservatoire where competition between studios, as well as between students, is taken for granted. Whereas in the Suzuki method, a community of teachers works together to educate students without competing with each other. In addition, this teacher described how not only teachers but also parents value and are gratified by development of all of the children. At the Japanese site, one could sense a rejection of competition in how playing in unison was explained as “consideration for or empathizing with one another.”

When younger children join in, the older children do not consider “those infants” an encumbrance.
Having been through then younger children join in, the older children do not consider “those infants” an encumbrance. Having been through the same experiences when they were younger, they naturally embrace the younger children. This helps in truly transcending the gap between different age groups, on the basis of human social interaction, not on the basis of ability based grouping. The more developed children, usually the older ones, want to include the younger students in their group, and the younger ones want to emulate and be close to the older children. What a great environment it is! Most importantly, it is dissemination of education—not for classes divided by ability, but for an entire group.

Unison playing may be one point of contention. The parties unappreciative of unison playing, particularly those in traditional music specialist training, criticize the Suzuki method based on this contention.

However, this narrative shows that teachers were conscious of the humanistic capacity that enabled many children to play music together, despite their disparity in ages and differences in ability.

Another teacher said,

Each child plays a tune totally differently as if each child’s unique individuality has found expression in the playing. So when children can play the tune together, even to the finest detail with one accord, you can say that is proof that great abilities are raised in them. Individuality is not harmed, ever.

The community feeling of the Suzuki students emerges in their music, in the very experience of unison playing when individuals who are simply alive together somehow merge through music.

You have a companion for playing violin—a playmate—even though you don’t say a word but only look at each other and smile while playing the same tune in unison during concerts. Such a companion can really be an encouragement.

Clearly, the daily educational practice of the Suzuki method resides within such a community of music.

3.2.3. Significance of parents’ growth
In the Suzuki method, not only is parents’ involvement a part of the education, but they are also considered to be learners themselves. Parental development through the Suzuki method is characteristically described as follows:

Parents are interested in the achievement of their child. They are not necessarily interested in the achievement of someone else’s child. Dr. Suzuki said you should be concerned about everyone, and that someone else achieves something great. In Western culture sometimes, there is too much competition. We think that “in order for me to achieve, you can not achieve”. But Dr. Suzuki’s idea was, "I can achieve, and so can you.” Maybe we don't all get to the same place, but we all get better. Everyone gets better.

Quoting from Suzuki’s words, the teacher wants to see the parents’ grow in the direction of overcoming competitiveness. From Shinichi Suzuki’s perspective, desire for the sole achievement of one’s own child meant merely the selfish desire for their early education, which was quite the opposite of what Suzuki pursued.

3.2.4. The vision for a better society through music
The narrative on parents’ growth is connected and led by the vision for a better society.

When everyone gets better, society gets better. And that was his interest: he was interested in social change. He wanted to change the way society worked.

At this point, we can see the multi-layered meaning of “every child can.” It includes each teacher’s desire for every child’s growth, along with the growth of the Suzuki community of children, parents, and teachers. In this is grounded the longing for a better society.
Here, we should say that the Suzuki method is not “private education” as initially understood but rather teaching oriented toward “education for the public.”

3.3. Teachers and growth
3.3.1. Teachers as continuous inquirers
Teachers who inquire continuously are described in a variety of ways. One description is as follows:
It is attractive to me that they never, never give you an answer […] I think it is the spirit of the Suzuki method that we are required to keep questioning ourselves. 

This is a narrative from a young teacher in Japan. An American teacher also noted the sense of necessary incompleteness and continuous inquiry in teaching and described the teacher training process by Shinich Suzuki in Matsumoto as follows:

But at Dr. Suzuki’s in Japan, nobody took notes; they just tried and observed and let it soak in, right? And then anything you don’t understand, you think about it, and you keep watching, and then someday you’ll understand, right? That was his teacher training. So you had to get it, he didn’t give it to you like this or written up.

The teacher appreciated Suzuki’s style and considered it highly effective because he made teachers question themselves.

3.3.2. The desire for that which is ineffable

The teacher who appreciates Shinichi Suzuki’s teaching for not giving complete answers or written up things seems to note some elements common to traditional Japanese education.

I think [the lack of complete answers] is smart. It takes much longer, but I think it’s very smart. I mean I admire the teacher training, teachers that can do that, organize very clearly, very well, but I do say that in Japan, I like their being a little bit more nonverbal, and you just watch and you just learn—like maybe the student grows up.

Although this teacher does not deny formal teacher training, she stresses something that cannot be obtained verbally. Indeed, ineffable things that cannot be acquired by easy questioning require more time.

3.3.3. Shinichi Suzuki, a man who respected every person as a human being

Many teachers confess to having learned things through direct interaction with Shinichi Suzuki
that cannot be expressed in words.

Without relying on theory, we learned how teachers lived and who they were, in other words, the essence of their lives.

These are, however, the words of a teacher of the younger generation who could no longer have the opportunity to learn directly from Shinichi Suzuki. Such language expresses the teachers’ desires to learn through interaction with teachers directly taught by Shinichi Suzuki.

Teachers describe how Suzuki’s philosophy respects each individual as a unique existence, which he demonstrated by treating everyone with the same degree of respect.

Whether you are a princess of Japan, a school janitor or a young visitor from Hawaii, he treats you with the same respect.

Teachers who want their students to grow as individuals explicitly share Suzuki’s example.

The foundation of the Suzuki Method is human education through music, which underlies not only the education of students but also the growth of teachers. According to Suzuki’s philosophy, music education is inseparable from human education. This is rooted in the traditional Japanese cultivation of Doh, or path, in which the acquisition of expertise in a particular area is equivalent to the overall development of an individual. The way in traditional Japanese education of observing what is considered good and learning it by spending however much time is necessary under the assumption that it cannot easily be articulated is contained within the Suzuki method.

4. Conclusion

4.1. The Ethos of the Suzuki teachers community

By focusing on the ethos of the teaching community, the meaning of “musical education as human education” has become clear with respect to the values and morals that teachers pass on and cultivate, in contrast to the notion of method as something that refers to techniques and protocols such as specific pedagogy or curricula.

The motto “every child can” is supported by the ethos directly transmitted and nurtured by Shinichi Suzuki, who embodied a philosophy of respecting everyone no matter who they were. This may be observed in the ethos of rejoicing in mutual growth without competition that formed among teachers. Respect for each individual also gave rise to the belief that teachers are the ones who should keep making inquiries. In the Suzuki teaching community, mutual opportunities to learn and teach are shared among all, as is the joy found in observing children’s growth.
4.1.1 Reevaluation of the Suzuki Method

By focusing on the Suzuki Method as the realization of “musical education as human education,” it was possible to understand educational practices in their entirety, whereby children play, teach, and learn in groups, and parents, teachers, and children all grow together. Especially with regard to the question of unison, an aspect has been revealed that contrasts markedly with the commonly expressed criticism that unison fails to respect individuality. The creative group act of playing music together turns out to be multiple, simultaneous actions in which individuals, while recognizing the uniqueness of each participant, understand one another’s inner timing through attention to tone and make adjustments. Each individual is positioned to grow only within the community that takes shape in the music produced through such playing.

4.1.2. Implication for the “education for the public”

It has also been suggested that a certain vision of “education for the public” lies at the core of the Suzuki Method. Today, school education that goes under the name of public education is rampant with individual competitions measured only by tangible results, such as test scores, and the “privatization” of education has developed into a state of constant competition.

The essence of pubic education, the essence, in fact, of “human education,” has been overlooked by school education that purports to be public education. It can be found, however, in the musical education of Shinichi Suzuki, which had been seen as a typical example of “private” education.

This is due, first of all, to the potential of music, where the ideals of education for the public held by Shinichi Suzuki can be concretely realized in various situations because the music that he pursued naturally resonates among others.

Second, as a result of the position adopted by Shinichi Suzuki, who entrusted each teacher with the active creation of education and attempted to share not a fixed praxis but an ideal of the Suzuki Method that would be continually developed by teachers, the practice and philosophy continue to be engaged by the community of teachers.

Today, amidst the emphasis on expressing the content and goals of education in concrete terms and evaluating results according to clear standards, the question “What is education?” tends to be restricted to what is possible to evaluate and manage. Such thinking makes it difficult to comprehend the significance of art to humans. In contrast, the education envisioned by Shinichi Suzuki makes us reconsider what “education” means in human society and why art is important.
4.2. Questions for further consideration

The present study selected circles of teachers who had a strong predilection to return to the original principles of the Suzuki Method. The degree to which teachers in the general population share these ideas and practices, however, is unknown, and further studies on the application of the Suzuki Method are needed. Having said this, the concrete words of teachers who inherit and pass on the words and philosophy of Shinichi Suzuki continue to stimulate the imagination of those of us involved in education with regard to how much influence education through music has on the reproduction of society itself.

References


1) These interviews took place 15 years after the founder had past away.

Acknowledgement

I would like to express my deepest gratitude to the following teachers who participated in the interviews:
Ms. Satoko Robert, Ms. Helen Higa, Ms. Barbara Balatero, Ms. Gilda Barston, Ms. Holly Blackwelder Carpenter, Ms. Gaye Detzer, Ms. Yasuko Eastman, Ms. Mihoko Hirata, Mr. Joseph Kaminsky, Ms. Cathryn Lee, Mr. Allen Lieb, Ms. Sandra Payton, Dr. Glen Spring, Ms. Kathleen Spring, Mr. Tsuneo Kobayashi, Ms. Hiroko Suzuki, Mr. Akira Nakjima, Mr. Hiromu Yasuda, Ms. Taeko Yasuda, Ms. Tomoyo Abe, Mr. Nobutake Ami, Ms. Sakiko Ishikawa, Ms. Sae Ohata, Mr. Naoki Sando, Ms. Emi Shimamori, Ms. Mihoko Fukaya, Mr. Munehiro Yasuda, Mr. Keiichi Yamada, Ms. Sonoko Fukasawa
Purpose: HICE 2015
Submission ID Number: 996

1) **Title:** What are Teachers’ Experiences with Accountability Assessments for K-12 Students with English as an Additional Language and a Co-existing Disability (SEAL+D) Across Multiple States?

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6) **Abstract:**
   Students with English as an additional language and a co-existing disability (SEAL+D) represent an increasing number and diverse K-12 student population in U.S. schools. SEAL+D like their mainstream peers are required to participate in states’ assessments of English language arts and mathematics, but unlike their peers they must also participate in (as English learners) English language proficiency assessments. The responsibility to implement these assessments to SEAL+D falls directly onto their teachers. The complexity in assessing these students provides multiple challenges and issues for teachers in considering both a student’s language and disability needs. Substantial research literature exists on assessment challenges for students with disabilities, but the research literature is virtually absent for students who are learning English in addition to having a disability - the SEAL+D population. The purpose of this study is to explore teachers’ experiences with accountability assessments of SEAL+D. Data was collected from a total of thirty-five asynchronous online focus groups that included a total of 232 educators from Arizona, Maine, Michigan, Minnesota and Washington. Data analysis is emergent and findings are to be determined, but preliminary analysis shows that teachers are conflicted in fulfilling the mandate of state assessments for this very complex student population.
Abstract

Recent research shows an upward trend of attrition among upperclassmen. This describes the recent academic advising strategies that have been implemented to promote undergraduate student academic achievement for second, third, and fourth year students. Included will be a description of the data analytics and technology implementation strategies for retaining students and increasing student confidence in taking responsibility for his/her academic program and the essential role of faculty and professional advisors in this process.

Student Retention and Success

Grand Valley State University was founded in 1960 through a public/private partnership, the university is the fastest growing in Michigan and serves a high percentage (almost 50%) of students who are the first in their families to attend college. GVSU provides sought-after liberal education and professional programs to more than 25,000 ethnically and economically diverse students on a lean administrative model and through a strong commitment to shared governance, community engagement, inclusion, sustainability, and collaborative innovation. Our university has a strong commitment to faculty governance, collegiality, and student success. The university is a military friendly designee, has a high rating for LGBT friendliness, has developed a leading edge structure for inclusion, and intentionally integrates meaningful opportunities for service learning, research, internships, and field work. Further, it has partnered with every Michigan community college (27) for reverse transfer agreements to assist students to gain a degree. The 2012-13 retention of first time in college students from first to second year was 80% and the six year graduation rate was 69% (www.gvsu.edu/ia). While first to second year retention was strong, there has been a gradual dip in overall retention rates at the university. This has led administrators to seek additional strategies to assure student success in terms of retention and graduation.

Undergraduate advising has been identified as a key strategy in student retention and success. A current trend in advising is centered on a first year learning experience component aimed to increase student’s success in higher education as measured by retention and time to graduation. Current research and insights using data analytics has shown that attrition rates in the United States is trending upward with an increase of 1.5% for second and third year students while first year attrition rates have decreased by 2%. Further, 29% of student credit hours consist of coursework that does not move the student to degree completion. This coursework, electives not in general education or the major, lost transfer credits, failed, withdrawn or zero credit courses, increases student’s costs and diverts university resources. The session describes the use of big data analytics and technology combined with faculty feedback to develop progress indicators for each academic program at Grand Valley State University. These indicators include: identification of courses most critical to complete early so that a student can progress through the major; identification of key predictors (customized success markers) which are those courses plus the grade achieved that determine whether a student stays in the major; identification of students who are “off track” in their academic progress (these are the B and C students who are seldom noticed); and metrics to show students majors that best match their academic achievement (www.eab.com).

The Education Advisory Board (EAB) is a division dedicated to serving higher education through best practice research and data analytics. EAB provides innovative student success technology that tracks academic risk
factors based on data from the institution that may impeded a student’s progress toward degree completion. A second service of EAB is the training and support to each institution provided by a team of experts to help identify obstacles and recommend solutions. Finally, EAB works with a broad range of institutions, both public and private, from large research universities to master’s institutions and community colleges. These collections of universities have been named the Student Success Collaborative (SSC) that encourages peer networking and practice sharing. Grand Valley State University is a member of the collaborative. (www.eab.com). Figure 1 illustrates the possible roadblocks to degree completion identified by the EAB.

![Current Efforts to Address the Causes of Student Attrition Insufficient - Roadblocks](image)

**Figure 1: Causes of Student Attrition.**

The list below reflects EAB’s research that drove formation of the Student Success Collaborative. In Figure 2, there are several states listed that tie funding to graduation and retention. Michigan is another state that has tied university funding to seven performance measures including retention, so Grand Valley State University found the need to use data analytic services to best support its 25,000+ students.

- Graduation Pressures
- Performance Funding
- First Year Retention
- Academic Challenges
- Progress Indicators
- Predictive Analytics (www.eab.com)

Figure 2 depicts the main results of that research. The results showed that student attrition occurs *later* than the first year, students take too many credits that delay timely completion of a degree, and it is essential to engage faculty in a dialog about the data to refine its results on critical courses in a major, to create strategies to reach out to targeted students, and develop resources for student decision making related to courses, schedules and majors.
Grand Valley State University (GVSU) is one of EAB’s university participants that use Big Data (each university uses its own data) from a decade of students who graduated from each major program at the university to refine and enhance advising of students by faculty and professional advisors. GVSU is using the electronic data systems to help advisors (faculty and professional) and administrators to: advise students, plan academic schedules, and be proactive, by way of early alert systems, with those students who might need some type of intervention. The data analysis, while helpful, tells only part of the story. It is essential that feedback from faculty and professional advisors help contextualize the data and give it clarity for implementation in student success efforts. This is the strategy GVSU is using to bridge the gap between research on retention, graduation, and student support efforts on campus.

The process for implementation used by Grand Valley State University is one aimed to create university buy-in by all stakeholders for use of data and predictive analytics to better support its students. The first steps that have been completed involved a presentation of the concepts underlying the Student Success Collaborative to administration, faculty, and staff advisors. Next, EAB was given access to the university data system to analyze degree completers for each major program over the past decade. At this point, the university’s professional advisors were trained in use of the SSC data sets. These advisors also began to provide feedback on the data results pointing out gaps, nuances, and inconsistencies that could only be identified by those thoroughly versed in the each academic major program. This led to refinement of the database. The next step was to identify pilot programs to work through data analysis questions and success marker identification. A success marker is a course (or courses) with a specific grade identified (by the data analysis) that was reported as essential to successful completion of a major. For example, the freshman level writing course with a grade of B was an identified success marker in the Biomedical Science major. These pilot programs were important to the validation of the data process. Again, the context and knowledge brought by stakeholders was essential to creating meaningful data analysis. Pilot program participants then became the advocates and teachers of how the Big Data could be used in all programs at the university. Small groups of units/departments were then invited to learn about the success marker data, how to access it, receive tips from the pilot groups, and were then given the opportunity to discuss the data and provide the unit’s recommendation of grade and course for its success markers. This information was then used by EAB to create a risk scale for each GVSU student (see figure 3). Final steps in progress at writing is to provide individual unit training of faculty and professional advisors on how to use the data in advising students.
The goals of this process were to develop advising interventions to:
- Empower more students to have the confidence to take responsibility for their academic future
- Identify and remove impediments and obstacles in programming
- Form new policies and procedures that support student success
- Learn about student’s persistence strategies
- Improve first year to second year retention by supporting students:
  - who are in the major
  - who may need help in finding a new one

**Building Success Markers and Driving Action Through Predictive Analytics**

Current SSC Platform Approach for Identifying and Intervening with At-Risk Students

The EAB website, www.eab.com, has a large repository of research articles including its own data analyses. One pattern that has been reported is that many students who drop out after the first year don’t ask for help and do not attract the attention of professors or professional advisors. While students who are failing or those who are excelling traditionally gain the attention, it is the students who are in the middle or “murky middle” (Figure 4) that leave the university. Further, retention data suggests that if a student does not declare a major or switches majors, advisors switch as well and the student could fall through the cracks. The use of the SSC database will help bridge those gaps and identify students who may not ordinarily receive advising guidance. Creating proactive interventions will succeed only if faculty and staff are invested in the SSC and are given the skills to apply the data in positive ways with students.

**Figure 3: Success Markers and Student Risk**

The EAB website, www.eab.com, has a large repository of research articles including its own data analyses. One pattern that has been reported is that many students who drop out after the first year don’t ask for help and do not attract the attention of professors or professional advisors. While students who are failing or those who are excelling traditionally gain the attention, it is the students who are in the middle or “murky middle” (Figure 4) that leave the university. Further, retention data suggests that if a student does not declare a major or switches majors, advisors switch as well and the student could fall through the cracks. The use of the SSC database will help bridge those gaps and identify students who may not ordinarily receive advising guidance. Creating proactive interventions will succeed only if faculty and staff are invested in the SSC and are given the skills to apply the data in positive ways with students.
To maximize the usefulness of data and technology, faculty, staff, and students need to adapt current behaviors to ensure that the messages are proactive as well as positive and that data is not seen as predicting doom for students. GVSU is home to almost 12,500 first generation students who have little experience with college processes. Advisor training on how to: discuss progress in school, enable students to take responsibility for their coursework, and use the major matching function (a program that looks at courses completed and major programs that use those courses) will lead to better student retention. Further, the training will also help units use the data to determine impediments and obstacles embedded in the curriculum. Development of proactive campaigns to reach out to students (attention to a student), effective advising sessions based on current advising practices (positive discussions with the student), and regular discussions among all stakeholders on how to make optimal use of the data will lead to ever more student success. GVSU is confident that this strategy will yield positive results. This confidence based on its successes with the Educational Support Program (ESP), a TRIO based program for first generation and high financial need students. TRIO is a set of federally-funded college opportunity program that motivate and support students from disadvantaged backgrounds in pursuit of a college degree. These students have been provided that type of advising that GVSU envisions for all its students. It implements a proactive and positive advising approach that encompasses career, academic, social and emotional needs through the SSC database. While nationally the retention rate for students who have this profile is 39% with only 5% earning a degree, the ESP program at GVSU has a retention rate of 96% and a six year graduation rate of 67%. We expect to scale this approach to the university through our SSC participation and are expecting to reap better retention and graduation rates than its current strong performances (http://www.gvsu.edu/ia/retention.htm). So data alone is only part of the message and it takes the people at the university as a whole to use data effectively in creating student success.

Special thanks to Education Advisory Board for use of its materials in this paper (www.eab.com).
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**Empowering Youth through Practical Life Skills**

**By Luke Livaudais**

**ABSTRACT**

High School aged students entering the professional world experience a deficiency in fundamental skills needed to succeed, particularly those with a lower socioeconomic status. Using the trial and error process and relying on short-term thinking can halt the student’s advancement in society. Our organization, Holomua Life Learning, empowers the youth by utilizing comprehensive lessons in practical life skills to provide vital knowledge, to change thinking patterns, and to promote action. Financial Literacy, Health and Wellness, Professional Development, and College Readiness are not only curriculums for individual advancement and health. Holomua Life Learning instructors teach students how to reason through important life choices and promote long-term decision-making. I will present ways of teaching practical life skills and methods in problem solving that will lead to societal success.

**Keywords**: Empowerment theory, Curriculum Theory, Community Education, and Human Resource Development.
CONTINUOUS IMPROVEMENT AND ACCREDITATION:
A FOCUS ON CURRICULUM DEVELOPMENT

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Abstract

This study describes the implementation of a pilot project for annual curriculum development process at the University of West Florida Professional Education Unit (PEU). The main purpose of the study is to present the initial plan of action for curriculum revision based on new Educational Leadership set of standards redefined by the Florida Department of Education (FLDOE). Subsequently, the study describes how the model was implemented and the favorable feedback from the state regarding the creation of new curriculum maps and rubrics that reflect the continuous improvement best practices for curriculum development. Final considerations demonstrate the importance of faculty members’ active involvement in the process from the creation of curriculum maps through the development of specific instruments to assess the standards. Future plans include the implementation of the same model in the remaining unit graduate programs.
Introduction

The impact of accountability policies on institutions of higher education has created the need for new organizational structures to facilitate the adjustment of these institutions to a more competitive environment. “The concept of measuring institutional effectiveness has become a key focus of accreditation for higher education institutions” (Conner, 2011, p.1). A much higher focus is currently given to outcome-based measurements rather than to resources and structures (Trout, 1981; Volkwein, 2010, as cited in Conner, 2011). The emphasis on student learning outcomes and goal attainment as indicators of education effectiveness, and the implementation of continuous improvement practices have been observed as new accountability trends regarding the accreditation of universities and colleges (Volkwein, 2010, as cited in Conner, 2011).

As a result of accreditation demands, institutions of higher education “have come under fire,” finding “themselves the subject of much discontent and criticism” (Bolden, 2007, p. 2). For this reason, it is important to make the process meaningful for all parts involved at both administration and instructional levels. “Demonstrating the linkages between the curriculum and an academic program’s competencies, which leads to quality improvement initiatives, is becoming an important component of the accreditation/certification standards for many professional organizations” (Perlin, 2011, p.28).

Considering this need to connect curriculum development and accreditation requirements in a purposeful way, the following questions were established prior to the development of the model piloted in the Educational Leadership (Certification) Master’s program. The questions specifically address 1) how the department defines curriculum and instruction and their respective goals and objectives, 2) what is the department’s
curriculum development plan prior to determining instruction, 3) how the curriculum development process assures continuity, sequence, and integration as necessary elements to building effectively organized group of learning experiences (Tyler, 2010), 4) how effective are the assessment instruments, and 5) what are the key roles in the process.

The design of a deductive model was established to address these issues. In other words, a curriculum development plan that evolved from general curriculum goals to specific instructional objectives was the approach chosen to assure continuity, sequence, and integration throughout the programs (Tyler, 2010). The development of curriculum maps as roadmaps guiding faculty and curriculum planners (Perlin, 2011, p.28) was of significant importance in the first stages of the process.

Some aspects we considered before piloting the model, as follows:

1. The changes in Florida Department of Education Uniform Core Curriculum Elements will always impact our curriculum structure (maps, rubrics, syllabi); creating a sort of domino effect that involves the realignment of information in a variety of documents.

2. The changes in these documents affect the data collection process, which needs to be in alignment to the curriculum and instruction.

The continuous improvement model adopted by the Professional Education Unit requires continuous development of our curriculum to meet our internal goals in compliance to state approval and accreditation agencies. The process is a moving target that will suffer changes every year and the unit need to be prepared for these transitions. The involvement of faculty in this process is fundamental in making curriculum and instructional decisions about each individual course and about the programs. For this
reason it is imperative that the development of curriculum maps, rubrics, and syllabi become a positive process rather than an overwhelming sea of frustration for both staff and faculty.

Previous experiences involving changes in curriculum to meet state approval and accreditation requirements led to the following questions:

1. Why are we making these changes in the curriculum?
2. Are we changing the curriculum merely to comply with external requirements?
3. What can we change in the curriculum that aligns the external requirements with our internal needs?
4. Should we understand the changing requirements as opportunities for curriculum improvement?

Proposed Plan of Action

Creating an effective and concise process, in which roles and responsibilities are well defined and established (Oliva, 2009), is the first step after determining the motivation for curricular changes. The following narrative is a suggestion for a preliminary plan to ease the curriculum changes process. This is a five step plan that involves 1) developing Program Student Learning Outcomes (SLOs) based on FLDOE Uniform Core Curriculum (UCC) elements, 2) Determine UCCs assessed in each course through the creation of curriculum maps, 3) redesigning course Student Learning Outcomes (SLOs), 4) determining instructional objectives for each key assignment, and 5) establishing performance descriptors for each objective.

The following roles and responsibilities should be established prior to plan implementation:
1. Lead faculty – a faculty member who will lead the whole process (schedule the meetings, defining due dates)

2. Curriculum facilitator – a staff member who will provide support to faculty facilitating the development of necessary documents (Curriculum maps, rubrics, syllabi).

3. Program Leaders – Designated faculty members that will work closely with different groups of faculty in completing necessary documentation related to curriculum and instruction.

4. Faculty members – individuals who will make the curriculum and instructional decisions.

5. Curriculum and assessment subcommittee - a group of individuals that will provide input on final instruments created, suggesting changes to improve the quality of final assessment.

The first step involves the development of curriculum maps where faculty will determine Program SLOs addressed in each course, and which UCC elements (e.g., Florida Educational Accomplished Practices) will be assessed in their courses in accordance to the state requirements established for each set of elements. When step one is completed, the “curriculum facilitator” (Wolf, 2007, in Hughes & Wolf, 2007, p.19) will create a spreadsheet for each course with Program SLOs and UCC elements chosen by each instructor during the Curriculum map meeting. These spreadsheets will be sent to each course instructor. In each spreadsheet, faculty will find the list of elements defined by them during the Curriculum map meeting combined by similarity and color coded.
During step two, faculty will define new course SLOs based on these groups of similar elements. Faculty members are free to establish different sets of combinations that differ from the previous provided by the “curriculum facilitator.” It is important however, that the wording in the course SLOs, somehow reflects the UCC elements, so an explicit alignment can be determined.

Steps three and four include the instructional portion of the process. From each course SLO, faculty will design one (or more) instructional objectives that will unfold to three performance descriptors (Exceeds, meets, does not meet). These instructional objectives and performance descriptors also need to include some of the UCC elements wording, since an explicit alignment is necessary specifically for FEAPs.

At the completion of this document, the curriculum facilitator will transfer the information to the rubric template and will work with program monitors and faculty on final details (assignment descriptions, Program SLOs specific for each assignment, NCATE/CAEP standards, and conceptual framework outcomes). Rubrics will be evaluated by Curriculum and Assessment Committee for improvement.

The aim of this simplified process is to ease faculty’s task of developing assessment tools in alignment with curriculum maps and syllabi. It is expected that with the use of one document that will include all necessary information, the curriculum facilitator will be able to reproduce the information in other documents assuring a more accurate alignment. A determination of an annual schedule for changes to be made in aligned documents is necessary to make this plan work effectively. For instance, changes will be made to the curriculum maps once a year (when necessary). These changes will
impact the spreadsheet created for each course; therefore, rubrics and syllabi will also be impacted.

Implementation – Educational Leadership Pilot (Summer 2013)

In summer 2013, the Professional Education Unit administration in collaboration with the Educational Leadership Master’s program faculty members implemented the proposed structure when redeveloping their curriculum according to new Florida Principal Leadership Standards and the Competencies and Skills Required for Certification in Educational Leadership in Florida. Through the need to comply with new state required curriculum elements, the team established that redesigning the program as part of the unit continuous improvement plan would be a priority. The Educational Leadership Team was then established and initiated the program review in early May 2013.

The Educational Leadership Team (ELT) was composed by five faculty members, the School of Education Director, and the Accreditation and Program Review Coordinator. Each member played well-defined roles in the process. Dr. Rebecca McBride was the lead faculty who assured all faculty members remained engaged submitting necessary documentation and maintaining an active participation. Dr. Charlotte Boling introduced most meetings clarifying programmatic and curricular needs providing the faculty members with the latest information about program approval and continuous improvement requirements. The curriculum facilitator worked with faculty members as a guide through the new structure providing document templates and breaking the larger task of redeveloping the curriculum in small steps in order to improve faculty understanding of the process.
The project was initiated in late spring 2013 and involved five steps: 1) developing Program Student Learning Outcomes (SLOs) based on FLDOE Uniform Core Curriculum (UCC) elements, 2) Determining UCCs assessed in each course through the creation of curriculum maps, 3) redesigning course Student Learning Outcomes (SLOs), 4) determining instructional objectives for each key assignment, and 5) establishing performance descriptors for each objective.

Ideally, the program student learning outcomes should have been developed first, but for time optimization purposes, we decided to start by the UCC curriculum maps. Using a top-bottom deductive approach, faculty defined in the first phase of the implementation, the elements addressed and assessed in each course throughout the program in overall curriculum maps. Subsequently to the completion of curriculum maps, the team progressed through more specific documents, such as rubrics and syllabi.

The development of the curriculum maps shaped the curriculum locating the assessment points throughout the program. Each indicator of the Florida Principal Standards and Competencies and Skills Required for Certification in Educational Leadership in Florida is addressed multiple times and assessed at least at two points throughout the program, one at the knowledge level and one at the mastery level, as required by the Florida Department of Education. The curriculum maps reflect the assessment points at the knowledge and mastery levels.

After each meeting, new curriculum maps were created or revised, so the team could work with the most up-to-date version of the document when making subsequent decisions.
The second phase involved listing curriculum elements and creating a matrix for each course including all elements covered from the curriculum maps. Due to a strong alignment between the two sets of elements, standards and competencies were combined by similarities to compose the new course student learning outcomes or course instructional goals. The curriculum facilitator created master documents for each course that consisted of Excel spreadsheets with all necessary elements included in order to create a meaningful visual that could aid faculty to develop the instructional part of the process. Each faculty members completed steps three and four designing an activity, its instructional goals (criteria), and performance descriptors to measure how successful candidates performed in the assignment. As this master file was finalized, it mirrored the rubrics and its necessary elements, making the next step a copy and paste process. The following images illustrate these two initial phases.
Figure 1. Portion of Competencies and Skills required for certification in Educational Leadership curriculum map indicating two points of assessment at the knowledge (K) and mastery (M) levels. The third point of assessment indicates mastery when candidates pass the Florida Educational Leadership Exam (FELE) at the completion of the program.
<table>
<thead>
<tr>
<th>Elements assessed/addressed</th>
<th>Competencies and Skills aligned to standards</th>
<th>Course SLOs (Suggested) At completion of this course, candidates will</th>
</tr>
</thead>
<tbody>
<tr>
<td>Domain 1: Student Achievement - Standard 1: Student learning results - effective school leaders achieve results on the school’s student learning goals. a. The school’s learning goals are based on the state’s adopted academic standards and the district’s adopted curriculum.</td>
<td>1.1.1 Analyze and determine appropriate school learning goals using State Board of Education adopted educational standards and district adopted curriculum.</td>
<td>Course SLO 1: Demonstrate knowledge in selecting appropriate learning goals and culturally relevant instructional methods for implementing State Board of Education adopted educational standards and district adopted curriculum (St 1a, 3c, FELE 1.1.1, 1.3.3).</td>
</tr>
<tr>
<td>Domain 2: Instructional Leadership - Standard 3: Instructional Plan Implementation - Effective school leaders work collaboratively to develop and implement an instructional framework that aligns curriculum with state standards, effective instructional practices, student learning needs and assessments. The leader: a. Implants the district’s adopted curricula and state’s adopted academic standards in a manner that is rigorous and culturally relevant to the students and school.</td>
<td>1.3.3 Evaluate and select rigorous and culturally relevant instructional methods for implementing State Board of Education adopted educational standards and district adopted curricula.</td>
<td>Course SLO 2: Understand that student learning results should be based on performance and growth on assessments, and that the application of effective strategies create high expectations for student learning gains (St. 2c, FELE 1.1, 1.2.3).</td>
</tr>
<tr>
<td>Domain 1: Student Achievement - Standard 2: Student Learning as a Priority - Effective school leaders demonstrate that student learning is their top priority through leadership actions that build and support a learning organization focused on student success. The leader: c. Generates high expectations for learning growth by all students.</td>
<td>1.2.3 Evaluate student learning results based on student performance and growth on assessments.</td>
<td>Course SLO 3: Identify appropriate evaluation and monitoring strategies that secure the Florida Educator Accomplished Practices are implemented through effective instruction (St. 3c, FELE 1.3.1).</td>
</tr>
</tbody>
</table>

**Figure 2.** Portion of individual course matrix including the elements from the Curriculum map listed and combined by similarities in course student learning outcomes (SLOs).
**Figure 3.** Completed course document including curriculum elements chosen, course student learning outcomes (or instructional goals), name and description of activity, instructional objectives (criteria), and performance descriptors for each criteria.

**Results**

From the group of five faculty members that were part of the team, three completely redesigned their rubrics for key assignment using this process. The other two faculty members made minor adjustments to their previous assignments. Reactions to the
new model were very positive. Faculty members who used the course matrix to design the new course SLOs, instructional objectives, and performance descriptors stated this format made the process more meaningful.

In September 2013, after the curriculum maps, curriculum matrices, and rubrics were finalized, we submitted the new documents to the Florida Department of Education in the Institutional Plan for Educational Programs (IPEP), which is an annual report state approved programs submit showing progress under a continuous improvement model complementary to the program review process that happens each seven years after the last approval. The feedback from FLDOE was terrific. Mrs. Eileen McDaniel, Chief of Bureau of Educator Recruitment, Development & Retention highlighted the excellent work the Educational Leadership Team performed in completing the report.

Future Plans

The remaining graduate programs housed at Professional Education Unit will be revised in summer 2014 using the same deductive approach for curriculum development and review. Assessment instruments will be redesigned for consistency with the new curriculum maps that will be created.
References


Abstract
Amended: Your Submission ID Number is 1012

Transforming Experiences: Designing a Successful Student-Centered Ed.D. Program

Although experiential learning is foundational to Drexel University, Pennsylvania, it remains unclear how experiential learning in the Drexel University Sacramento (DUS), California Ed.D. satellite program contributes to the redefining of one’s habits of mind and points of view as a scholar, educator, and societal contributor. Thus, this narrative study gathered stories of the learning experiences of DUS Ed.D. alumni, as one means to understand how experiential learning persists to transform and sustain this purposeful selection of scholarly, educational leaders.

The twelve alumni in this study graduated from the Drexel University Sacramento Ed.D. in Leadership and Management program within June 2011 and December 2013. The program design observes a hybrid, cohort, model, focused on educational leadership for the professional practitioner and educational leader.

Narrative inquiry provided the ingress to delve into the graduate students’ reconstructed learning experiences while in the program as well as into their present day perceptions of who they have become, upon attaining the Ed.D. Assuming a social constructivist paradigm, this study was informed by a collection of personal interviews, an archival document, and researcher field notes. The key archival document, the “Keystones” exists as the gold standard for DUS Ed.D. program graduate students. Essentially, it is a set of underlying principles for the neophyte doctoral student and is so written that it remains intact as a living document to sustain the alumni throughout life.

Study participants confirmed the use of the Keystones and attested to personal transformation and professional growth. Results of this study, based on findings include first, prepared to learn, Ed.D. graduates valued, engaged in, and retained meaningful learning. Second, graduate student assumed level of participation in cohort socialization and collaborative learning was a consequence of self-regulated preference for in-class social climate and ideal learning style. Third, significant learning inspired confidence to make life-changing decisions.

This study concluded by recommending refining cohort cohesiveness through the lens of leadership identity and ethics. Additionally, a pool of virtual volunteer Ed.D. alumni could be established to advise students in the program, thus providing students with additional vis-à-vis time that graduate students perceive as valuable and necessary program features.
Climate Change in Four Dimensions
Massive Open Online Course (CC4D MOOC):
What We Have Learned from Our Students

Paper presented at the
Hawaii International Conference on Education
Honolulu, Hawaii - January 2015

By

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University of California, San Diego Extension
Abstract

The researchers examined multiple dimensions of the *Climate Change in Four Dimensions* (CC4D) MOOC offered through UC San Diego. This MOOC was offered for credit for a fee and without credit at no charge. A total of 1,272 students from all over the world sustained a consistent level of participation throughout the 10-week course and 449 met the criteria for course completion. The performance on course activities between credit and no-credit students was of similar high quality and students were generally very positive about the course design and the impact the course had on their attitudes and behaviors. In addition to data related to evidence-based performance and instructional design, other aspects of the CC4D MOOC operationalization are discussed including the technology infrastructure, the effect on professors’ professional growth and administrative support.
Acknowledgments

The authors wish to thank the following persons for their contributions to this report: Professors Charles Kennel, Naomi Oreskes, Richard Somerville, David Victor and Ramanathan Veerabhadran; Kim McIntrye, JD., Instructor of Record; and UC San Diego Extension staff members Charisa Adams, Harry Caruso, Taylor Christenson, Henry DeVries, Phillip Dy, Isaac Hembree, Shannon McDonald, Dr. Ilse Ortabasi, Eric Sims, Rhea Stewart and Dr. Hugo Villar.
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Introduction

The purpose of this evaluation was to examine the first offering of the UC San Diego MOOC, *Climate Change in Four Dimensions* (CC4D). An evaluation model was constructed that targeted six areas of focus: 1) participant population profile, 2) instructional design, 3) technology infrastructure, 4) evidence-based performance, 5) faculty (lecturer) professional growth and 6) administrative support. Before the results of this investigation are shared, a brief history of MOOCs and a description of the CC4D MOOC are provided.

I. Description of CC4D MOOC

A. Brief History of Massive Open Online Courses (MOOCs). A MOOC is a massive open online course that enables a large group of learners from around the world to access and engage in coursework from highly reputable institutions of higher education at no cost and typically with no academic credit. The MOOC innovation was born in the aftermath of the worst financial crisis in the US since the Great Depression. The 2008 Great Recession left US colleges and universities with a stark financial outlook creating a rise in tuition rates. Student debt soon surpassed the one trillion dollar mark, and was higher than health care costs in the US.

A perfect storm, MOOCs were an outgrowth of the Open Education Resource movement made possible by web 2.0, when the web evolved beyond a static offering of content to an editable, publishing platform for the general public. With hyperlinking capabilities, web 2.0 generated a culture of amateur scholarship whereby users could easily reference content sources, and “crowd source” textbooks, translations and reliable references, free for public consumption (Horizon Report 2007). Jeff Jarvis, in his 2009 bestselling book, *What Would Google Do?*, outlined a growing culture of “cheaper than free” business models and hypothesized that higher education would succumb to this phenomenon in order to remain competitive in the global, internet age.

Just three years later, the New York Times proclaimed 2012 the year of the MOOC and identified three major players, edX, Udacity and, Coursera. The MOOC could be the great disrupter of higher education, irrevocably changing the business model of degree granting institutions where students no longer pay for courses but instead pay to certify their credentials. Mid-2014 Coursera enabled learners to earn a Verified Certificate and in partnership with LinkedIn, link their certificate to their profile, creating a digital academic identity accessible by employers. Some experts think MOOC’s will propel higher education to a commodity-based, student-centric model, others are skeptical, and some consider it the “single most important experiment in higher education” (Weissmann, 2012). The verdict is still out.

Much like traditional learning management systems, the origins of MOOC platforms have largely originated at institutions of higher education by
professors who want to improve the educational experience and the reach of their teaching, as seen in the top MOOC platforms; Coursera, developed by two Stanford professors, EdX, a partnership between Harvard and MIT, and Udacity, developed by a Stanford professor and Google executive. All of these MOOC platforms launched, in earnest, in 2012.

Some Key Facts about MOOCs:

- Twenty million students in over 200 countries have enrolled in a MOOC, and the numbers continue to rise sharply. (Karsenti, 2013)

- Only 2.6 percent of higher education institutions currently have a MOOC, another 9.4 percent report MOOCs are in the planning stages. (Allen & Seaman, 2013)

- The majority of institutions (55.4%) report they are still undecided about MOOCs, while under one-third (32.7%) say they have no plans for a MOOC. (Allen & Seaman, 2013)

- Academic leaders remain unconvinced that MOOCs represent a sustainable method for offering online courses, but do believe they provide an important means for institutions to learn about online pedagogy. (Allen & Seaman, 2013)

- Academic leaders are not concerned about MOOC instruction being accepted in the workplace, but do have concerns that credentials for MOOC completion will cause confusion about higher education degrees. (Allen & Seaman, 2013)

- Researcher Katy Jordan found from examining data from 279 MOOCs (Udacity, Coursera, edX) that the average course enrolls about 43,000 students and 6.5% stay until the end. (Jordan, 2013)

- Coursera reports a more conservative completion rate of 3-4%, with some as high as 10% (Haggard, 2013)

- Employers have yet to weigh-in on the value of MOOCs as an educational credential. (Blake, 2014)

B. The Climate Change in Four Dimensions (CC4D) MOOC. The University of California San Diego (UCSD) Extension and Scripps Institution of Oceanography undertook the creation of the Climate Change in Four Dimensions (CC4D) MOOC to address the following questions.

- If “for credit” and “not for credit” versions of the CC4D MOOC were offered simultaneously, would the learning outcomes of students taking the course for credit and students taking the course for no credit differ?
• How might the CC4D MOOC be designed/operationalized to optimize student completion rate (beyond the present, typical MOOC completion rate of 3-4%)?
• What are the benefits and limitations of the MOOC environment pedagogically and technically?
• What type of financial model that would enable the development and sustainability of MOOCs?

In addition to these broader questions, questions about the instructional design of the CC4D MOOC were also of great importance:

• Would the incorporation of social media usage within the CC4D MOOC foster student-to-student communication during and beyond the course?
• Would offering weekly live, synchronous sessions promote sustained student engagement?
• What instructional design elements would be important to promote ease of navigation and clarity of expectations?

UC San Diego Extension and Scripps Institution of Oceanography partnered in early 2013 to develop and deliver an existing graduate level 4-unit course, Climate Change in Four Dimensions (CC4D). Using Coursera.org massive open online course (MOOC) delivery platform, the CC4D MOOC with no credit associated was offered for free to the global public for the first time in January 2014. A companion fee-based Blackboard online course with continuing education credit was offered simultaneously.

Coursera is the MOOC leader with over 125 institutions of higher education partnerships, 700 course offerings and 8,000,000 learners, it has a built-in marketing base. Like most MOOCs, UCSD’s CC4D MOOC experienced high enrollments and the Blackboard traditional online, pay to earn-credit, experienced average enrollments.

Course Description. The CC4D MOOC is a 10-week course, delivered by five renowned professors: Charles Kennel, Naomi Oreskes, Richard Somerville, David Victor and Ramanathan Veerabhadran. There are twenty class sessions; two per week. The course content consists of: weekly, two sets of lectures, readings, Check Your Knowledge quizzes (ungraded), quiz (graded), activity (graded), a live synchronous “Bridge Session”; one course mid-term exam; and, one final exam.

Close attention was given to clarity to minimize student questions. The syllabus detailed weekly assignments, readings, due dates; the Course-at-a-Glance document provided a delivery date view of all graded assignments; and the Weekly Study Guide enabled students to plan their studies with sufficient time allotted to each task. In addition, the Weekly Bridge Session offered students the opportunity to participate in a live, synchronous, web-based, audio/visual session with the Instructor of Record and Course Facilitators. The
Weekly Bridge Session made connections between the former weeks’ learning objectives and the upcoming weeks’ learning objectives. Students could ask questions and often a “guest speaker” was featured. Guest speakers included authors, subject matter experts and the professors.

Increasing and sustaining student engagement throughout the course and beyond the course end date was an important focus within the course design. In addition to the Weekly Bridge Session, Social Media were used extensively in the course to enable students to build networks. Facebook, LinkedIn and Twitter were used in conjunction with the Coursera-based discussion board. The social media groups were open to the public and remain open so that past and current students may intermingle, sharing their knowledge and experience beyond the constraints of the course start and end dates.

To accelerate the development of the CC4D MOOC, a live offering of the course was videotaped and cut into short modules. Simultaneously, instructional designers and course builders created the Coursera-based course shell modeled after our research-based existing online learning course menus and content structure. A sample weeks’ worth of content was uploaded and reviewed. A final design was established, including a “style guide” that identified layout, fonts, colors etc.

II. The CC4D MOOC Evaluation Model

The evaluation model developed for the CC4D MOOC was informed by the work of Grover, Franz, Schneider & Pea (2013), entitled “The MOOC as Distributed Intelligence: Dimensions of a Framework & Evaluation of MOOCs”. Using Pea’s (1993) notion of distributed intelligence in which “…resources that shape and enable learning and learner activity are distributed in configuration across people, environments, and situations.”, these researchers propose an evaluation approach/framework that “… defines distinct, but interconnected, dimensions of MOOCs that must work synergistically to maximize individual as well as collective learning.”

Figure 1. CC4D MOOC Evaluation Components
Instruments Used to Collect Data. A variety of data-collection instruments were developed for 1) the student participating in the CC4D MOOC and 2) those responsible for the design and delivery of the CC4D MOOC. Table 1 below identifies these instruments.

<table>
<thead>
<tr>
<th>Evaluation Component</th>
<th>Data Source/s</th>
<th>Instrument/s</th>
</tr>
</thead>
<tbody>
<tr>
<td>Participant Population Profile</td>
<td>students enrolling in course</td>
<td>• Getting To Know You survey</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• End-of-Course survey (for students completing course only)</td>
</tr>
<tr>
<td>Instructional Design</td>
<td>students completing course</td>
<td>• End of Course survey</td>
</tr>
<tr>
<td>Technology Infrastructure</td>
<td>students completing course</td>
<td>• End of Course survey</td>
</tr>
<tr>
<td></td>
<td>technical engineers</td>
<td>• questionnaire/interview</td>
</tr>
<tr>
<td>Evidence-Based Performance</td>
<td>students completing course</td>
<td>• Tests &amp; Quizzes</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Rubric for Activity Reflections</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Rubric for Final Project (only for students receiving course credit)</td>
</tr>
<tr>
<td>Faculty (Lecturer)</td>
<td>lectures</td>
<td>• questionnaire</td>
</tr>
<tr>
<td>Professional Development</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Administrative Support</td>
<td>Director of Online Learning</td>
<td>• matrix of roles, tasks &amp; time</td>
</tr>
<tr>
<td></td>
<td>Support Staff</td>
<td>• questionnaire/interview</td>
</tr>
</tbody>
</table>

III. Findings

The six components of the CC4D MOOC Evaluation Model above (see Figure 1) provide the organizational structure for reporting the findings.

A. Participant Population Profile.

A total of 14,872 people initially enrolled the MOOC. The map below (see Figure 2) indicates many of the geographical locations represented by the enrollees.  

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1 For a more thorough list of countries represented by initial MOOC enrollees, see Appendix A.
Course Participation. Enrolling in a MOOC is more akin with a “catalog view” since many students who enroll never actually log into the course. Out of the 14,872 enrollments, 9,068 students logged into the course once it began, 1,272 students sustained active participation in the course until the end, and 449 students completed the course.²

To capture a profile of initial enrollees, an optional 13-item Getting-to-Know-You survey was given at the beginning of the course. There were 2,898 survey respondents. While all survey findings were informative, several were of particular interest. Forty-eight percent of respondents are employed full time and 9% are retired. The primary language of over half (51%) of the respondents is not English. Fifty-seven percent of respondents are between 22-39 years of age but 11% are 60-89 years old. The population was divided equally between women and men. And, the top three reasons for taking the MOOC were; 1) the construction of knowledge, 2) life-long learning, and 3) curiosity. For a full description of the Getting-to-Know-You survey results, see Appendix B.

As stated above, a total of 449 students completed the course (see Table 2). Course completion by Blackboard students taking the course for credit (CR) was determined by a final grade of 80% or higher. Ninety percent of the CR students completed the course. Completion of the course by MOOC students taking the course for no credit (NCR) was determined by successful completion of the final exam. Five percent of the NCR students completed the course. While successful completion of the final exam was the single criteria for course completion by NCR students, it is instructive to note that 98% of these students

completed the mid-term exam, 80% completed all eight course quizzes and 64% completed eight or more of the 10 reflective writing activities.

Table 2. UC San Diego CC4D MOOC Participants

<table>
<thead>
<tr>
<th>Course Type</th>
<th>Logged-Into Course at Beginning</th>
<th>Sustained Participation from Beginning to End of Course</th>
<th>Completed Course Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>MOOC No Credit (NCR)</td>
<td>9047</td>
<td>1,272 (14%)</td>
<td>NCR Students = successful completion of Final Exam</td>
</tr>
<tr>
<td>Blackboard Earn Credit (CR)</td>
<td>21</td>
<td>20 (95%)</td>
<td>CR Students = a final grade of 80% or higher</td>
</tr>
</tbody>
</table>

For students who actually logged into the CC4D MOOC (n=9,047), the graph below (see Figure 3) provides information about the level of participation in course activities (in rolling seven-day periods) across the duration of the course. Activities included 1) visiting the course (logging in), 2) watching lectures, 3) submitting an exercise, and 4) browsing the forums.

Figure 3. Graph of Participation in Activities by Rolling 7-Day Periods throughout Duration of Course

Students Completing the CC4D MOOC. A total of 449 students successfully completed the CC4D MOOC\(^3\). Nineteen of these students took the course for

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\(^3\) MOOC completion is defined as successful completion of the final exam.
credit while 430 of completing students did not receive any type of formal credit. All completing students were asked to complete an *End-of-Course Student Survey* (see Appendix C for survey questions). Three-hundred and two students (70% of total completing CC4D MOOC) taking the course for no credit (NCR) and 14 students (74% of total completing MOOC) taking the course for credit (CR) completed the survey. (NOTE: As with most surveys, not all survey items received responses from all survey participants.)

Of great relevance to the completing student population profile were two sections within the survey focusing on 1) the impact of the course on their future behaviors and 2) ways in which they would continue to communicate about the course content. In Table 3, 89% of the respondents taking the course for no credit (NCR students) and 100% of the respondents taking the course for credit (CR students) reported that they would pursue further climate change education. Forty-one percent of the NCR students plan to continue to pursue career opportunities in the climate change field while 71% of the CR students plan to do so. Possibly the most impressive result of the CC4D MOOC was students’ report that, as a result of taking the course, they would increase their efforts to reduce their carbon footprints (91% NCR respondents and 100% CR respondents). Students also overwhelmingly agreed that they would recommend this course to others. Below is a sampling of student comments related to the overall quality of the MOOC:

*This was the third MOOC I took about the subject of Climate Change and it was by far the best.*

*I love the four-fold approach to this issue. It made this course very well rounded and complete.*

*I truly appreciated the opportunity to learn from such amazing professors.*

*I absolutely loved the course! Exceeded my expectations - it was a free course, yet its’ structure and challenging content were comparable to my graduate studies experience (sans the degree of required work). Excellent instructors.*

*I love all the new learning I am able to get through Coursera and I am becoming a real climate activist in my local area.*

*Well done and more than anything, it as been a very important way of educating people on a most important subject. Please, please keep offering it. Through the outreach to tens of thousands of us, you get the message across. It may be the single most important method to do so.*
Table 3. Course Impact on Future Behavior/s

<table>
<thead>
<tr>
<th>Course Impact on Future Behavior/s</th>
<th>Agree</th>
<th>Neutral</th>
<th>Disagree</th>
<th>Total N</th>
</tr>
</thead>
<tbody>
<tr>
<td>I will pursue further education in the field.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>89% (256)</td>
<td>100%</td>
<td>9% (26)</td>
<td>3% (9)</td>
<td>291</td>
</tr>
<tr>
<td>As a result of this course, I will continue to pursue career opportunities in this field.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>41% (119)</td>
<td>71% (10)</td>
<td>31% (90)</td>
<td>14% (2)</td>
<td>287</td>
</tr>
<tr>
<td>As a result of this course, I will increase my efforts to reduce my carbon footprint.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>91% (265)</td>
<td>100% (14)</td>
<td>7% (20)</td>
<td>2% (5)</td>
<td>292</td>
</tr>
<tr>
<td>Based on my experiences, I will recommend this course to others.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>93% (272)</td>
<td>100% (14)</td>
<td>5% (16)</td>
<td>2% (5)</td>
<td>293</td>
</tr>
</tbody>
</table>

A large number of students reported that they plan to continue communicating with others about what they learned in the course through a variety of communication channels (see Table 4).

Table 4. Ongoing Communication about Course Content

<table>
<thead>
<tr>
<th>Ongoing Communication about Course Content (multiple responses allowed)</th>
<th>F-2-F</th>
<th>Mobile Device</th>
<th>Social Media</th>
<th>Email</th>
<th>Total Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Colleagues</td>
<td>184</td>
<td>19</td>
<td>1</td>
<td>57</td>
<td>311</td>
</tr>
<tr>
<td>Family</td>
<td>214</td>
<td>26</td>
<td>1</td>
<td>37</td>
<td>333</td>
</tr>
<tr>
<td>Friends</td>
<td>208</td>
<td>31</td>
<td>2</td>
<td>81</td>
<td>389</td>
</tr>
<tr>
<td>Classmates</td>
<td>51</td>
<td>11</td>
<td>0</td>
<td>71</td>
<td>157</td>
</tr>
</tbody>
</table>

B. Instructional Design

In addition to providing the information above about the overall impact of the CC4D MOOC on students, the End-of-Course Student Survey also provided extensive information from students about different aspects of the CC4D MOOC’s design.

1) *Were the structure and expectations of the course clear?* (See Table 5.)

Students were quite positive about the clarity of structure and expectations in the CC4D MOOC. The *Course-at-a-Glance* feature that provided quick reference to the course schedule, readings, assignments and due dates was very helpful. Course objectives were clear and the course content matched
the initial description. The grading policy and activity evaluation rubrics were clearly communicated. While weekly materials were available in a timely fashion, some students requested that course readings be made available earlier to allow them more flexibility in terms of time management. Students found the course pacing was appropriate, video segments were accessible and, in general, it was easy to get into the course and use all the course features. While a majority of students agreed that the course fostered a sense of community, the percentage agreeing to this statement was noticeably smaller than those agreeing to the other statements. The success of the CC4D MOOC related to community building will be examined in more detail a bit later in the Instructional Design section.

Table 5. Course Structure & Expectations

<table>
<thead>
<tr>
<th>Course Structure &amp; Expectations</th>
<th>Agree</th>
<th>Neutral</th>
<th>Disagree</th>
<th>Total N</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Course-at-a-Glance helped me understand the structure of the course.</td>
<td>92% (277)</td>
<td>7% (21)</td>
<td>1% (2)</td>
<td>300</td>
</tr>
<tr>
<td>The course learning objectives were clearly communicated.</td>
<td>95% (286)</td>
<td>4% (12)</td>
<td>1% (3)</td>
<td>301</td>
</tr>
<tr>
<td>The course grading policy, activity rubrics, and due dates were clearly communicated.</td>
<td>89% (269)</td>
<td>6% (19)</td>
<td>5% (13)</td>
<td>301</td>
</tr>
<tr>
<td>Clear directions were provided for the required activities.</td>
<td>93% (278)</td>
<td>5% (16)</td>
<td>2% (6)</td>
<td>300</td>
</tr>
<tr>
<td>Weekly materials were available in a timely fashion.</td>
<td>95% (284)</td>
<td>4% (13)</td>
<td>1% (3)</td>
<td>300</td>
</tr>
<tr>
<td>The course pacing was appropriate.</td>
<td>86% (258)</td>
<td>9% (27)</td>
<td>14% (2)</td>
<td>300</td>
</tr>
<tr>
<td>The course fostered a sense of community.</td>
<td>65% (196)</td>
<td>29% (86)</td>
<td>43% (6)</td>
<td>300</td>
</tr>
<tr>
<td>It was easy to navigate within the course.</td>
<td>86% (259)</td>
<td>79% (11)</td>
<td>7% (1)</td>
<td>302</td>
</tr>
<tr>
<td>I was able to access the video segments.</td>
<td>96% (290)</td>
<td>93% (13)</td>
<td>2% (7)</td>
<td>301</td>
</tr>
<tr>
<td>The course content matched course description</td>
<td>93% (281)</td>
<td>5% (16)</td>
<td>2% (4)</td>
<td>301</td>
</tr>
<tr>
<td>The content in the course was easily accessible to me. I was able to easily get into the course and use all the course features.</td>
<td>91% (271)</td>
<td>7% (21)</td>
<td>14% (2)</td>
<td>299</td>
</tr>
</tbody>
</table>
2) Was the content from the subject matter experts valuable? (See Table 6.)

A substantial majority of students agreed that the lecturers provided content was both compelling and relevant. Only a very small percentage felt that the CC4D MOOC was too intellectually challenging for them. A large majority of students agreed that the course was open and adaptable to emergent ideas and current events and that the readings and additional resources were very useful. Students did have some suggestions related to the course content:

*It could be a good idea to put environmental information in about Latin America, Asia and Africa.*

*I thought this was a fantastic course that looked at many different aspects of climate change. If running again I would hope the focus would be on the latest IPCC report.*

*I would have enjoyed a lecture on the climate movement/climate change activism. Could a large social movement help bring about the policy changes needed to get deep emission cuts?*

A large majority of students agreed that the number of course activities, quizzes, and exams was sufficient and that the CC4D MOOC met their expectations.

<table>
<thead>
<tr>
<th>Course Content</th>
<th>Agree NCR</th>
<th>Agree CR</th>
<th>Neutral NCR</th>
<th>Neutral CR</th>
<th>Disagree NCR</th>
<th>Disagree CR</th>
<th>Total N</th>
</tr>
</thead>
<tbody>
<tr>
<td>The level of intellectual challenge in this course was above my abilities.</td>
<td>15% (45)</td>
<td>7% (1)</td>
<td>10% (30)</td>
<td>14% (2)</td>
<td>75% (219)</td>
<td>79% (11)</td>
<td>294</td>
</tr>
<tr>
<td>Professor #1’s lectures provided compelling, relevant content.</td>
<td>97% (283)</td>
<td>100% (14)</td>
<td>2% (6)</td>
<td>0% (0)</td>
<td>1% (3)</td>
<td>0% (0)</td>
<td>292</td>
</tr>
<tr>
<td>Professor #2’s lectures provided compelling, relevant content.</td>
<td>90% (264)</td>
<td>93% (13)</td>
<td>7% (20)</td>
<td>7% (1)</td>
<td>3% (9)</td>
<td>0% (0)</td>
<td>293</td>
</tr>
<tr>
<td>Professor #3’s lectures provided compelling, relevant content.</td>
<td>95% (276)</td>
<td>100% (14)</td>
<td>4% (13)</td>
<td>0% (0)</td>
<td>1% (3)</td>
<td>0% (0)</td>
<td>292</td>
</tr>
<tr>
<td>Professor #4’s lectures provided compelling, relevant content.</td>
<td>94% (277)</td>
<td>100% (14)</td>
<td>5% (14)</td>
<td>0% (0)</td>
<td>1% (3)</td>
<td>0% (0)</td>
<td>294</td>
</tr>
<tr>
<td>Professor #5’s lecture provided compelling, relevant content.</td>
<td>87% (253)</td>
<td>100% (14)</td>
<td>11% (33)</td>
<td>0% (0)</td>
<td>2% (6)</td>
<td>0% (0)</td>
<td>292</td>
</tr>
<tr>
<td>The course was open and adaptable to emergent ideas and current events (e.g. guest speakers during)</td>
<td>75% (219)</td>
<td>100% (14)</td>
<td>20% (58)</td>
<td>0% (0)</td>
<td>5% (14)</td>
<td>0% (0)</td>
<td>291</td>
</tr>
</tbody>
</table>
the weekly bridge sessions, announcement messages, discussion forums, social media). The additional suggested resources (e.g., Web sites, videos, additional readings) increased my understanding of the subject.

<table>
<thead>
<tr>
<th>Question</th>
<th>87% (255)</th>
<th>86% (12)</th>
<th>12% (36)</th>
<th>14% (2)</th>
<th>1% (2)</th>
<th>0% (0)</th>
<th>293</th>
<th>14</th>
</tr>
</thead>
<tbody>
<tr>
<td>The majority of the required readings were timely and current.</td>
<td>86% (252)</td>
<td>93% (13)</td>
<td>11% (33)</td>
<td>7% (1)</td>
<td>3% (7)</td>
<td>0% (0)</td>
<td>292</td>
<td>14</td>
</tr>
<tr>
<td>There were enough activities in the course.</td>
<td>90% (260)</td>
<td>100% (14)</td>
<td>8% (22)</td>
<td>0% (0)</td>
<td>2% (6)</td>
<td>0% (0)</td>
<td>288</td>
<td>14</td>
</tr>
<tr>
<td>There were enough quizzes and exams in the course.</td>
<td>94% (276)</td>
<td>100% (14)</td>
<td>5% (15)</td>
<td>0% (0)</td>
<td>1% (3)</td>
<td>0% (0)</td>
<td>294</td>
<td>14</td>
</tr>
<tr>
<td>It was important to me to complete the graded quizzes, tests and activities.</td>
<td>88% (257)</td>
<td>100% (14)</td>
<td>8% (24)</td>
<td>0% (0)</td>
<td>4% (12)</td>
<td>0% (0)</td>
<td>293</td>
<td>14</td>
</tr>
<tr>
<td>Given my reasons for participating in the Climate Change MOOC, the MOOC met my expectations</td>
<td>94% (277)</td>
<td>100% (14)</td>
<td>3% (10)</td>
<td>0% (0)</td>
<td>3% (7)</td>
<td>0% (0)</td>
<td>294</td>
<td>14</td>
</tr>
</tbody>
</table>

3) **Did the course activities support student learning?** (See Table 7.)

A substantial majority of students agreed that the individual activities (Check-Your-Knowledge Quizzes & Weekly Quizzes, Weekly Activities, Mid-Term, Final) were relevant, meaningful and helped them assess their progress. Some student comments, however, reflect a degree of disappointment in the quiz questions:

> Too many quiz items were simply an exercise in memory retention of, at times, trivial bit of information. I would recommend changing quiz format or questions to reflect more critical thought application - making people use the information to problem solve rather than simply remembering data.

> I felt that most of the quiz questions were irrelevant factual information that did not reflect understanding but trivia and memory. Future quizzes should focus on big picture understandings.

The Discussion Forums and interactions using various forms of social media were considered less useful. Several student comments are instructive here:
I sensed some inactivity in discussion forums... Maybe it could have been an active moderator who drove the discussion, put interesting points or questions out for discussion.

The discussion forums lacked participation. Possibly this was due to social media siphoning off students who would otherwise have posted in the forums.

Table 7. Learning Activities

<table>
<thead>
<tr>
<th>Learning Activities</th>
<th>Agree</th>
<th>Neutral</th>
<th>Disagree</th>
<th>Total N</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>NCR</td>
<td>CR</td>
<td>NCR</td>
<td>CR</td>
</tr>
<tr>
<td>The course activities were relevant and meaningful to my life and the larger community.</td>
<td>74% (193)</td>
<td>86% (12)</td>
<td>22% (57)</td>
<td>14% (2)</td>
</tr>
<tr>
<td>The scored activities (e.g. Check Your Knowledge Quizzes &amp; Weekly Quizzes, Weekly Activities, Mid-Term, Final) helped me to assess my progress.</td>
<td>91% (268)</td>
<td>100% (14)</td>
<td>5% (15)</td>
<td>0% (0)</td>
</tr>
<tr>
<td>Using the discussion forums was a useful learning/interaction tool for me during this course.</td>
<td>33% (95)</td>
<td>50% (7)</td>
<td>52% (149)</td>
<td>36% (5)</td>
</tr>
<tr>
<td>Using LinkedIn was a useful learning/interaction tool for me during this course.</td>
<td>13% (37)</td>
<td>14% (2)</td>
<td>48% (136)</td>
<td>50% (7)</td>
</tr>
<tr>
<td>Using Twitter was a useful learning/interaction tool for me during this course.</td>
<td>8% (23)</td>
<td>7% (1)</td>
<td>53% (150)</td>
<td>57% (8)</td>
</tr>
<tr>
<td>Using Facebook was a useful learning/interaction tool for me during this course.</td>
<td>29% (83)</td>
<td>43% (6)</td>
<td>43% (124)</td>
<td>43% (6)</td>
</tr>
</tbody>
</table>

4) Was there adequate support for your learning throughout the course? (See Table 8.)

The weekly Bridge Sessions were designed to offer real-time support to students. Forty-two percent of the NCR students and 57% of the CR students
reported attending one or more of the Bridge Sessions. For students who did not attend these sessions, the two most common reasons given were 1) conflicts with other life activities and 2) time zone incompatibility.

While the majority of the CR students benefitted from their classmates’ contributions, only about a third of the NCR students felt they benefitted from this input. Over 70% of all students agreed that the course Study Guides were useful and a solid majority of students felt that the course environment fostered a supportive community through the use of a variety of communication options (e.g. discussion forum, weekly bridge sessions, social media). A majority of students also agree that the course environment was sensitive to their individual needs (e.g. culture, views, motivation for taking the course).

Table 8. Support for Learning

<table>
<thead>
<tr>
<th>Support for Learning</th>
<th>Agree</th>
<th>Neutral</th>
<th>Disagree</th>
<th>Total N</th>
</tr>
</thead>
<tbody>
<tr>
<td>The weekly bridge sessions were a useful learning/interaction tool for me during this course.</td>
<td>34% (89)</td>
<td>53% (136)</td>
<td>13% (33)</td>
<td>258 12</td>
</tr>
<tr>
<td>My classmates’ contributions were important to my understanding of the content.</td>
<td>34% (89)</td>
<td>52% (134)</td>
<td>14% (37)</td>
<td>260 13</td>
</tr>
<tr>
<td>The weekly Study Guides were useful to me.</td>
<td>72% (207)</td>
<td>21% (3)</td>
<td>7% (19)</td>
<td>0% (0)</td>
</tr>
<tr>
<td>The course environment fostered a supportive community through the use of a variety of communication options (e.g. discussion forum, weekly bridge session, social media).</td>
<td>63% (180)</td>
<td>33% (94)</td>
<td>4% (11)</td>
<td>14% (2)</td>
</tr>
<tr>
<td>The course environment was sensitive to my individual needs (e.g. culture, views, motivation for taking the course).</td>
<td>69% (196)</td>
<td>28% (79)</td>
<td>3% (10)</td>
<td>7% (1)</td>
</tr>
</tbody>
</table>

In the survey, students were also given a list of CC4D MOOC and other resources and asked to identify those they used to address any content questions they had. (See Table 9).
Table 9. Addressing Content Questions

<table>
<thead>
<tr>
<th>My content questions were addressed using: (multiple responses allowed)</th>
<th>NCR</th>
<th>CR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ask the Professor</td>
<td>14% (33)</td>
<td>29% (4)</td>
</tr>
<tr>
<td>FAQs</td>
<td>32% (76)</td>
<td>36% (5)</td>
</tr>
<tr>
<td>Discussion Forum</td>
<td>52% (123)</td>
<td>71% (10)</td>
</tr>
<tr>
<td>Weekly Bridge Sessions</td>
<td>18% (44)</td>
<td>21% (3)</td>
</tr>
<tr>
<td>Social Media</td>
<td>25% (60)</td>
<td>29% (4)</td>
</tr>
<tr>
<td>Google/Internet Search</td>
<td>53% (125)</td>
<td>43% (6)</td>
</tr>
</tbody>
</table>

Additional open-ended responses related to addressing content questions included accessing information from prior courses, the supplementary readings, and the summaries of course reading materials as well as emailing the lecturers directly.

C. Technology Infrastructure

The Director of Online Learning interviewed the CC4D MOOC Course Builder and Programmer Analyst to gather information on the quality of the technology infrastructure behind this MOOC. Below is a summary of their thoughts related to three critical questions:

- **Did the platform used for CC4D MOOC provide adequate capacity related to instructional design?**

  In general, the Coursera platform’s use of HTML provides for flexibility on the appearance of content pages but at the cost of a large initial setup time. The predefined course modules (such as quizzes, discussions forums, and announcements) are less flexible and can be restrictive at times. For example, the types of quizzes questions are limited to a few options. Some of the deficiencies, such as the ability to time release content pages were overcome with custom programming.

  A large downfall in administrating Coursera is the inability to modify student scores or deadlines to account for special needs or circumstances.

- **Did the platform used for C4DC MOOC provide adequate capacity for data capture?**

  The platform (Coursera) provides a variety of analytics and reports. Reports are available for overall course statistics, student goals and achievements, student activity and performance, course activity, and student grades. The capabilities of Coursera continue to expand with the recent addition of a new analytics page. This page summarizes overall statistics, provides demographics on students (including gender, education, employment status, and geographical location), student engagement in the course, and course activity.

- **Did the platform used for CC4D MOOC provide adequate capacity for user access?**

  It is easy for a student to set up an account in Coursera and register for courses. Those being interviewed felt that the CC4D MOOC provides an easy
and intuitive method to navigate through the course that differed from the usual way Coursera courses are presented. Video lectures can be viewed on the lesson page or can be downloaded for later viewing. The ability to download the videos also allows students from countries with restrictive internet access to view the lectures. Subtitles and text transcriptions provide alternate ways to access the content.

D. Evidence-Based Performance

A variety of learning assessment instruments were developed and utilized for the CC4D MOOC (see Table 10).

Table 10. Learning Assessment Instruments

<table>
<thead>
<tr>
<th>Assessment Instruments</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pretest</td>
<td>25 multiple choice questions (identical to final exam)</td>
</tr>
<tr>
<td>Eight quizzes</td>
<td>10 multiple choice questions per quiz</td>
</tr>
<tr>
<td>Discussion Board participation (FOR CREDIT [CR] students only)</td>
<td>Four posts required to received full credit</td>
</tr>
<tr>
<td>Evaluation Rubric for Project Outline &amp; Final Project (FOR CREDIT [CR] students only) (See Appendix &lt;#&gt; for this rubric.)</td>
<td>Students selected topic from readings, lectures, and/or current events from one of the dimensions of climate change – policy, science, history or adaptation and designed/developed an information piece about that topic for an audience of their choice. Rubric contained cells to evaluate 1) topic content, 2) project organization, 3) information accuracy and 4) project originality.</td>
</tr>
<tr>
<td>Evaluation Rubric for Activity Reflections (1 each week = 10) (See Appendix &lt;#&gt; for this rubric.)</td>
<td>Students wrote reflection (minimum = 100 words) on each weekly activity. Rubric contained cells to evaluate 1) quality of questions addressed and 2) clarity of writing.</td>
</tr>
<tr>
<td>A midterm exam</td>
<td>25 multiple choice questions</td>
</tr>
<tr>
<td>A final exam</td>
<td>25 multiple choice questions</td>
</tr>
</tbody>
</table>

Performance on Tests and Quizzes. The CC4D MOOC contained a pretest, midterm and final exam. In addition to these tests, there were also eight quizzes. Table 11 shows the performance on these assessments for both the NCR and CR students.

Table 11. Performance on Tests & Quizzes

<table>
<thead>
<tr>
<th>Test &amp; Quizzes</th>
<th>NO CREDIT STUDENTS (NCR)</th>
<th>CREDIT STUDENTS (CR)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Max Score</td>
<td>Mean Score</td>
</tr>
<tr>
<td>A pretest</td>
<td>25 multiple choice questions</td>
<td></td>
</tr>
<tr>
<td>A midterm exam</td>
<td>25 multiple choice questions</td>
<td></td>
</tr>
<tr>
<td>A final exam</td>
<td>25 multiple choice questions</td>
<td></td>
</tr>
</tbody>
</table>
Mean scores for the NCR and CR students were generally comparable as was the percentage of students completing the tests and quizzes. The average final exam score (percentage) for NCR students was 86% and 92% for CR students. The average score (percentage) for all quizzes combined was 77% for NCR students and 79% for those taking the course for credit.

Performance on Activity Reflections. Students were also asked to complete an activity (for Activity Descriptions, see Appendix D) that corresponded with the topic for each week and complete an Activity Reflection for each of these 10 activities (see Appendix E for samples of Activity Reflections). The average completion rate for all activity reflections combined was 66% for NCR students and 88% for those taking the course for credit.

The Evaluation Rubric for Activity Reflections (see Appendix F) was used to score a randomly selected sample of 20 students’ Activity Reflections across the 10 weeks; 10 students who posted their reflections on the Discussion Board and 10 students who posted their reflections on the dedicated Facebook page (see Table 12).

Table 12. Performance on Activity Reflections of 20 Randomly Selected Students Across 10 Weeks

<table>
<thead>
<tr>
<th>Students</th>
<th>Weekly Scores (in percentages)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>#1</td>
</tr>
<tr>
<td><strong>Discussion Board</strong></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>90</td>
</tr>
<tr>
<td>2</td>
<td>100</td>
</tr>
<tr>
<td>3</td>
<td>100</td>
</tr>
<tr>
<td>4</td>
<td>100</td>
</tr>
<tr>
<td>5</td>
<td>95</td>
</tr>
<tr>
<td>6</td>
<td>-</td>
</tr>
<tr>
<td>7</td>
<td>90</td>
</tr>
</tbody>
</table>

* The number of students completing each test/quiz includes but is not limited to students defined as completing the course.
Performance on Final Projects (CR students only). Students taking the CC4D MOOC for credit were also required to complete a Final Project. For a description of the Final Project, see Appendix G. Nineteen students completed the Final Project. Final Projects were scored using the Evaluation Rubric for Final Project (see Appendix H). The number of possible points on the Final Project was 400. The mean score was 363.16 (SD16.2). Students were also required to review the initial project outlines of two of their peers. For a sample of these peer reviews, see Appendix I. For samples of students’ Final Projects, see Appendix J.

Beyond these findings, another measure of the CC4D MOOC’s effectiveness was students’ self-report data related to their commitment to reducing their own carbon footprints. Within the End-of-Course Student Survey, students were asked whether, as a result of this course, they would increase their efforts to reduce their carbon footprints. Over 90% of the students indicated that they would increase their efforts to do so (see Table 13).

Table 13. Carbon Footprint Behavior

<table>
<thead>
<tr>
<th>Carbon Footprint Behavior</th>
<th>Agree</th>
<th>Neutral</th>
<th>Disagree</th>
<th>Total N</th>
</tr>
</thead>
<tbody>
<tr>
<td>As a result of this course I will increase my efforts to reduce my carbon footprint.</td>
<td>NCR</td>
<td>CR</td>
<td>NCR</td>
<td>CR</td>
</tr>
<tr>
<td>91% (265)</td>
<td>100% (14)</td>
<td>7% (20)</td>
<td>0% (0)</td>
<td>2% (5)</td>
</tr>
</tbody>
</table>

In addition to this information, the Week #1 Activity asked students to generate at least two actions they could take to reduce their energy usage and carbon emissions as well as ways they might influence policy decision-making. Below are samples of students’ Week #1 Activity Reflections:
• “The exercise was an eye opener. I never thought that taking flight could have such significant impact on one’s own carbon footprint. I was surprised to see my carbon footprint is 10.90 metric tons of CO2. That is nearly 15 times the average footprint for people in Sri Lanka where I live. And quite close to the average carbon footprint of a citizen of a developed nation. Almost three times the world average. To reach the worldwide target I need to reduce my CO2 emission by little over 80%.

The actions I can take to reduce the carbon footprint are:
1) Replace the 7 year-old car with a more energy efficient newer model, if possible a hybrid vehicle.
2) Reduce the number of shopping trips a week. Presently I shop daily.
3) Reduce the number of visits to school (sending lunch, delivering various things kids require)
4) Use public transport to go to work, where possible.
5) Recycle kitchen waste
6) Buy products with fewer packing”

• “In general, I learned that my ad hoc attempts to lower energy consumption have been modest success: despite living in an outer suburban location and working in the central city, my estimated carbon footprint is less than half the Australian national average. I also learned that this is still 50% over the world average and three times the worldwide target to combat climate change. Unfortunately, that is not a surprise. What is more surprising is that the largest part of the carbon footprint comes from secondary usage. For example, eating meat rather than a vegetarian diet or the manufactured component of owning a car regardless of how much it is used. Each of these have an estimated carbon footprint of 1 ton per year. So the plan must be to look into these secondary usage factors and understand which ones are most significant. I think that food selection looks the most promising - less meat and looking for local / seasonal produce. As a bonus, there are probably health benefits to this.”

• “The concept of a CARBON FOOTPRINT is based on emissions associated with CONSUMPTION. It is important to keep this in mind when calculating a carbon footprint, particularly for the INDIRECT components (see the Wikipedia article “Carbon footprint”). So, for example, if I buy (fossil fuel) gasoline for my car, so that I can drive to visit a friend or buy some food to eat, the emissions from my car are a direct contribution to my personal carbon footprint. On the other hand, if I use that fuel to deliver a product that my employer has sold to his customer, the emissions do not belong to me, so they do not contribute to my carbon footprint; I am not the consumer associated with these emissions. Similarly, if I buy an apple and eat it, there are some emissions associated with producing and delivering that apple to me, and these emissions are an indirect contribution to my carbon footprint.

Carbon taxes give us a clue to indirect contributions to carbon footprints. Typically, a carbon tax is applied to the initial supplier of a fossil fuel, the coalmine owner, or the oil well owner, or the natural gas well owner as the fuel is delivered to the initial buyer. That initial buyer then pays a little more for the fuel, so that the supplier can pay the carbon tax. As the fuel follows its path to the consumer(s), at each sale on the way a portion of
the price covers the carbon tax. Ultimately, it’s the consumer who both pays the tax and receives the footprint contribution. Follow the money if you want to understand the footprint.

As an individual, I will have difficulty in reducing my carbon footprint. I already drive a plug-in hybrid electric vehicle (which was not listed on the website) whose emissions, both from the tailpipe and from the power plant, are equal to those from an ordinary car with a gasoline fuel efficiency of 59 miles per gallon. This is in part because about 2/3 of my miles are powered by electricity, and in California the power plants are cleaner than most. I also have exchanged many of my incandescent light bulbs for compact fluorescents, but I still have several on dimmers that I will replace with LEDs when the price comes down, perhaps in two years.

Other than that, there two things I can do: try to convince our political leaders to (1) force the replacement of all fossil fuel power plants by clean ones (renewables and nuclear), and (2) embark on a major program to replace all conventional cars and light trucks with plug-in hybrids. This last one would save 6 million barrels of oil every day.”

• “My impact was 7.11. As somebody who lives in China, I am consuming about two times the national average. However, most of this can be attributed to flights as I have recently moved to China from Australia and traveled around the states earlier this year. The things that I am going to consider aside from ensuring that my travel is localised, is largely in my food and temperature control. Our apartment has poor insulation so I often have the heater on. This is something I need to change as I feel this is a massive contributor to my footprint. Aside from this I was to start ordering organic foods that are in season and grown locally. By starting with these things I feel that I will be able to have a smaller carbon footprint this year.”

E. Faculty (Lecturer) Professional Growth
To ascertain any professional benefits the CC4D MOOC professors (lecturers) might experience as a result of their involvement, all professors were sent an email in which they were asked to respond to several questions.

One of the professors responded in a more global fashion. This professor was encouraged by the student participation in the MOOC, and felt the experience was worthwhile. “It was easy for the faculty; the course organizers did a superb job with the material in the lectures. I will teach the course again and will be happy to help with other MOOCs.” With regard to the effect of MOOC involvement on research, the professor noted that involvement in the MOOC would “force me to keep up with the latest.” The professor felt the MOOC had a “tremendous” impact on professional networking and engagement opportunities with academic colleagues.

Below are the specific questions contained in the email and two additional professors’ responses:

Question #1: Do you feel that your participation in the Climate Change MOOC will have any effect on your teaching practices? If so, in what way/s?
Professor X: “I have retired from classroom teaching, so perhaps the MOOC can’t directly affect my teaching, but the MOOC experience will help me in my public speaking and outreach activities. I think the MOOC made me more aware of the very large diversity in the audience. Public speaking always involves a conversation, and it’s important to know as much as possible about the audience. In this sense, lecturing for the MOOC is like being on a TV program, where the huge audience is remote and no feedback is possible. Then the trick is to speak to the camera just as though it were a live audience. In this sense, having a class of live students in the room while we were giving the MOOC lectures was extremely helpful.”

Professor Y: Not really. I am a highly interactive teacher, even in large groups, and the MOOC is anything but that. What the MOOC has done is forced me to think in classic lecture mode—how to get all the information out in the right order without the benefit of interaction. That is, in some sense, harder and also required massively higher preparation for each class.

Question #2: Do you feel that your participation in the Climate Change MOOC will have any effect on your research endeavors? If so, in what way/s?

Professor X: Probably there is no direct connection between the MOOC and my own research. My scientific research is mathematical and very technical, dealing with computer simulations of parts of the climate system. The MOOC lectures were elementary in terms of their science content, and they do not directly touch any of the specific research topics I work on. For example, in the MOOC I can say that clouds contribute to the greenhouse effect, but I do research on the detailed mathematical techniques for modeling this process. On the other hand, I am also working part-time on the history of climate science, and that is something I did talk about during the MOOC, so I can take away from the MOOC some of the historical topics and ideas that seemed to work well in the MOOC lectures.

Professor Y: Not at all. My research is totally unaffected, I think.

Question #3: What, if any, effect has your participation in the Climate Change MOOC had on your networking with academic colleagues and/or other professionals in your field?

Professor X: It is probably too early to say whether there is any networking effect of the MOOC. My colleagues have shown a lot of interest in MOOCs and in distance learning in general. Some of my colleagues love the concept of MOOCs, and some do not. Some professors think MOOCs are a part of plots by evil university
administrators to make education much cheaper and much lower in quality. I think some of them view MOOCs as a threat to their job security, the same way a bank teller might regard an ATM!

Professor Y: So far, minimal effect. I did give a lecture last week in Muscatine Iowa and discovered several people in the audience had been part of the MOOC, so that was pleasing and it also probably increased the utility of the experience for them. So far, other than some passing press mentions, I have seen no impact on my networking.

Question #4: If a colleague asked you about your experience with this MOOC, what would you tell them (e.g. What surprised you? How did experience match your expectations? Would you participate in another MOOC? Why or why not?).

Professor X: I was stunned by the enormous enrollment, and I will be curious to see how many of the people who signed up actually lasted until the end of the MOOC and did all the work. It was a surprise to see how well the professional team did in making a polished MOOC out of the raw material of our recorded lectures. That’s a huge task, and they did a generally excellent job of it. I had feared that I would spend a lot of time working with them, but that didn’t happen. The experience in the classroom pretty much matched my expectations, but I have a long history of having my lectures recorded. I might well participate in another MOOC, but as I said, I am formally retired from teaching, so any new MOOC would have me giving only a very few lectures. The parts of the MOOC that I found difficult or imperfectly implemented were the ones I had worried about from the start: How do the students get their questions answered, how do we know the answers are scientifically impeccable, and how do we get any feedback from the thousands of students? How do we lecturers retain control of our material and possession of our intellectual property, while not getting chewed up by the logistical demands of this huge project? These are early days for MOOCs, and I think every new MOOC is a learning experience for all involved.

Professor Y: It was relatively easy because extension and Charlie Kennel did all the work. I still don’t see the “business” case for us as an academic institution in doing this, but I was interested in the experience because I would like to learn the business case if one exists. So for now I would recommend it mainly on the logic of curiosity rather than something that is centrally compelling yet. At some point we will need to get serious about incentives—we are doing this mainly because we are interested volunteers, but that system won’t scale.
F. Administrative Support

Dr. Charles Kennel, Director and Distinguished Professor, Emeritus, Scripps Institution of Oceanography, University of California San Diego and Dr. Mary Lindenstein Walshok, Associate Vice Chancellor for Public Programs and Dean of Extension at the University of California San Diego collaborated on the concept of creating the CC4D MOOC in early 2013. Subsequently, a verbal agreement was reached and the goal of creating a Coursera based MOOC by January of 2014 was set. Bruce Dunn, Associate Dean and Chief Operating Officer of Extension at the University of California San Diego then defined parameters of partnership with SIO faculty, confirmed parameters of use of Coursera platform, developed business model, obtained buy-in from academic and administrative units involved, and allocated seed money.

The Climate Change in Four Dimensions course had been offered previously as a four unit graduate level course through Scripps Institution of Oceanography. For the purpose of the MOOC offering, there were five professors, one of whom provided a guest lecture, the other four professors had given this course in a face-to-face environment previously and made minor modifications to their lectures for the recorded MOOC version. In addition to delivering their lectures over a ten week period to a face-to-face class (which was videotaped for the MOOC), videotaped interviews with each professor were conducted focusing on their career interests, motivations and trajectory to provide learners with a glimpse into these careers.

The professors also provided content review, optionally participated in the weekly live Bridge Session, and answered the instructor of record’s questions when called upon to do so. The professors lent their support for the creation of the MOOC; however, they were not compensated for the endeavor.

The pre-production, production, post-production and first offering of the CC4D MOOC occurred from mid-April 2013 through March 2014.

The creation of the CC4D MOOC involved a number of roles and a considerable number of hours (see Table 14). Including the five professors, Dean, Associate Dean, Academic Director, and Marketing Director, there were a total of 25 people directly involved in the CC4D MOOC. Unless otherwise noted in the table below, one person filled each role.

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<tr>
<th>Role</th>
<th>Tasks</th>
<th>Est. Hours</th>
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<tbody>
<tr>
<td>Director, Online Learning</td>
<td>Evaluate Coursera platform; establish relationships with Coursera reps; determine course elements/parameters; identify affordable student engagement opportunities to...</td>
<td>467</td>
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</table>
counter non-instructor mediated learning environment; create team/roles, define deliverables, project milestones and manage resources; secure recording venue; create data collection methods; analyze data collected; manage relationships and timeline. Monitor Discussion Board and social media for inappropriate posts.* Co-author CC4D MOOC report.

* we were concerned that the topic of climate change could be volatile and posts could become argumentative

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<tr>
<th>Role</th>
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<tr>
<td>Instructor of Record</td>
<td>Co-create assessments &amp; activities, identify additional readings/course resources, review lecture video segments, name segments, participate in Discussion Board, social media, Bridge Sessions, identify and secure potential guest speakers for Bridge Sessions, Co-define course elements, layout, content access, and user interface. (Blackboard for credit course effort not reflected)</td>
</tr>
<tr>
<td>Instructional Designer</td>
<td>Attend lectures, co-create assessments, design activities, create social media group areas (Facebook, Twitter, LinkedIn), segment video lectures, name segments, participate in and monitor Discussion Board and social media discussions, create weekly Bridge Session presentation and lead the live session, respond to student questions. Co-define course elements, layout, content access, and user interface.</td>
</tr>
<tr>
<td>Marketing Representative</td>
<td>Create marketing messaging for existing social media channels and new Coursera course information page, monitor results</td>
</tr>
<tr>
<td>Program Representative</td>
<td>Answer admin questions for students and IOR, coordinate efforts of programmatic department with Online learning team, assist in social media planning.</td>
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<tr>
<td>Programmer Analyst</td>
<td>Create layout, formatting and style guide, Review all content and links, create specialized code, perform research, fix issues, create surveys, gather and analyze data, attend Bridge Sessions, provide user support, interact with Coursera Support</td>
</tr>
<tr>
<td>Audio/Video Producer</td>
<td>All stages and aspects of audio/video production and editing using digital format; and, prepare all files for upload and internet delivery.</td>
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<tr>
<td>Course Builder</td>
<td>Design/format each page in Coursera; upload video to Coursera &amp; YouTube; type captions for video &amp; insert captions; trim video that started/ended in mid-sentence; download captions from YouTube &amp; upload to Coursera; program quizzes, activities, exams; set-up social media accounts; upload PDFs/documents; meetings; post Bridge sessions; fix issues; post weekly announcements; check links, lessons, and video each week.</td>
</tr>
<tr>
<td>Online Learning Program Rep.</td>
<td>Assist Director, Program Analyst, and Instructional Designers in defining processes, assist team in</td>
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4 For more detail description of marketing activities, see Appendix K.
Administrative Assistant

accomplishing, and similar Course Builder activities
Ordered supplies; coordinated meetings & Bridge Sessions; processed consultant invoices and payments; assisted AV Producer, helped process video files, upload files to YouTube; checked files on Coursera.

Coursera Institutional Representative (2)

Assisted in establishing course shell in Coursera; guided team in use of Coursera; answered questions and provide general support when requested.

Coursera Representative

Assisted in establishing course shell in Coursera; guided team in use of Coursera; answered technical questions and provide support when requested.

Researcher/Instructional Design Consultant

Assisted in the design and review of CC4D weekly activities; co-designed research methods for CC4D report; co-authored CC4D report.

IV. Conclusion and Suggestions for Further Research

The CC4D MOOC was an experiment to determine the efficacy of MOOC delivery. Attention was given to exploring the financial model, assessing the resources and effort involved in creating a MOOC, investigating the use of research-driven pedagogical strategies to potentially increase student engagement in a non-instructor-mediated learning environment, and taking a comparative look at students’ performance in a non-credit and credit-based learning environment.

Lessons Learned

• Return on Investment
  - None of the fee-based options have generated sufficient revenue to recoup the MOOC costs. Some institutions justify MOOC costs as a means to increase institution and program visibility and enrollments in related fee-based programs.

  - Mastering the new learning management system and establishing the design methodology, page layout, and user interface used 30% of the resources. Future MOOC development costs may potentially be less if same LMS and similar content design methods are used.

  - Offering the same MOOC multiple times optimizes the potential return on investment.

• Resources
  - Technical and instructional design skills are required on the MOOC development team. The MOOC Learning Management System is relatively new
so programming and instructional design adjustments to the delivery system were necessary to achieve the desired instructional goals.

- MOOC development is an iterative technical endeavor; the classic software release life cycle (alpha, beta, gold) is a relevant reference to the MOOC content development stages and a reminder that a first launch may take longer than expected.

- Establishing new communication protocols to support the broad interdepartmental teamwork would benefit the project.

• **Learner & Pedagogy**
  - Learning performance between MOOC and Blackboard, non-credit and credit students mean scores were generally comparable, as was the percentage of students completing the tests and quizzes.

  - Data revealed that learners have their own motivations that extend beyond that receipt of credit/grades for pursuing learning.

  - Live, synchronous bridge sessions were well received, even with global time differences. Guest speaker participation appeared to be one factor that increased session attendance.

  - While the use of social media is a worthy pursuit, students’ end-of-course survey responses indicated that the manner in which it was used in this MOOC rendered its usefulness minimal. (Although it is instructive to note that 25% of students reported that the will continue to communicate with others on topics addressed in the course.)

**Questions for Further Research** (These questions focus on learner motivation and course design.)

• **Since learner performance was generally equal between MOOC and traditional online course environments, what should be the guiding criteria to select a course for MOOC delivery?** What criteria represent the best interest of the institution, the professor, and the learners?

• **Data suggest many learners’ rationale and motivation for course completion is different from the traditional course completion focus on grades, course units, and degrees.** How might content design enable learner preference in course completion while still providing value to employers seeking an institution verified, knowledgeable workforce?

• **How might students be grouped effectively in a MOOC environment to leverage prior content knowledge as a means of more purposeful student-to-student**
engagement and a reduced reliance on the instructor as the only subject matter expert?

• Does having a Coursera-based course completion record on a semi-public professional internet based profile (i.e. LinkedIn, Spiceworks, Doximity) increase the likelihood of obtaining a job interview?

• The majority of students who took the course have completed college and obtained a degree. What are future ways might we now consider engaging with these students? Might we consider them alumni?

• As educators and technologists, how might we design content and employ instructional strategies to more effectively address the plethora of motivations that prompt students to engage in learning?

  - While new pedagogical practices were employed in the CC4D MOOC design to increase student engagement, the overarching course design held the lecture front and center in a structured 10-week course. How might MOOC learning events be presented to learners to more fully engage them in a way that is meaningful to meet their needs?

  - Are we diminishing learners’ motivation and ability to learn by constraining the course to a 10-week time frame, with classes regularly scheduled each week?

• Using social media in the CC4D MOOC was intended to enhance student-to-student communication and, in doing so, help build a sense of community within the MOOC environment. Yet, students reported social media had minimal effect. How might learners effectively use social media within a MOOC environment to increase:

  ... content knowledge?

  ... awareness and appreciation for their classmates’ cultures by understanding how their own culture is similar and different?

  ... a sense of community?
References


Appendix

Appendix A  Countries Represented by Enrollees in CC4D MOOC
Appendix B  CC4D Getting-to-Know-You Survey Results
Appendix C  CC4D End-of-Course Survey Questions
Appendix D  CC4D MOOC Weekly Activity Descriptions
Appendix E  CC4D MOOC Activity Reflection Student Samples
Appendix F  CC4D MOOC Evaluation Rubric for Activity Reflections
Appendix G  CC4D MOOC Instructions for Project Outline & Final Project
Appendix H  CC4D MOOC Evaluation Rubric for Final Project
Appendix I  Sample of Peer Reviews of Initial Project Outlines
Appendix J  Sample of Final Projects (URLs)
Appendix K  Climate Change MOOC Marketing Activities & Results
Appendix A

Countries Represented by Enrollees in CC4D MOOC
## Countries Represented by Those Enrolling in the CC4D MOOC

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<th>Country</th>
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<tr>
<td>Congo, The Democratic Republic of the</td>
<td>0.03%</td>
</tr>
<tr>
<td>Antigua and Barbuda</td>
<td>0.03%</td>
</tr>
<tr>
<td>Afghanistan</td>
<td>0.03%</td>
</tr>
<tr>
<td>Zambia</td>
<td>0.02%</td>
</tr>
<tr>
<td>Papua New Guinea</td>
<td>0.02%</td>
</tr>
<tr>
<td>Malawi</td>
<td>0.02%</td>
</tr>
<tr>
<td>Madagascar</td>
<td>0.02%</td>
</tr>
<tr>
<td>Burkina Faso</td>
<td>0.02%</td>
</tr>
<tr>
<td>Bahrain</td>
<td>0.02%</td>
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<tr>
<td>Angola</td>
<td>0.02%</td>
</tr>
<tr>
<td>Vanuatu</td>
<td>0.01%</td>
</tr>
<tr>
<td>Timor-Leste</td>
<td>0.01%</td>
</tr>
<tr>
<td>Suriname</td>
<td>0.01%</td>
</tr>
<tr>
<td>Somalia</td>
<td>0.01%</td>
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<tr>
<td>Sierra Leone</td>
<td>0.01%</td>
</tr>
<tr>
<td>Seychelles</td>
<td>0.01%</td>
</tr>
<tr>
<td>Libyan Arab Jamahiriya</td>
<td>0.01%</td>
</tr>
<tr>
<td>Djibouti</td>
<td>0.01%</td>
</tr>
<tr>
<td>Cape Verde</td>
<td>0.01%</td>
</tr>
<tr>
<td>Botswana</td>
<td>0.01%</td>
</tr>
<tr>
<td>Belize</td>
<td>0.01%</td>
</tr>
<tr>
<td>Yemen</td>
<td>0.01%</td>
</tr>
<tr>
<td>Tonga</td>
<td>0.01%</td>
</tr>
<tr>
<td>Togo</td>
<td>0.01%</td>
</tr>
<tr>
<td>Tajikistan</td>
<td>0.01%</td>
</tr>
<tr>
<td>Samoa</td>
<td>0.01%</td>
</tr>
<tr>
<td>Saint Kitts and Nevis</td>
<td>0.01%</td>
</tr>
<tr>
<td>Reunion</td>
<td>0.01%</td>
</tr>
<tr>
<td>Montenegro</td>
<td>0.01%</td>
</tr>
<tr>
<td>Marshall Islands</td>
<td>0.01%</td>
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<tr>
<td>Mali</td>
<td>0.01%</td>
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<tr>
<td>Lesotho</td>
<td>0.01%</td>
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<tr>
<td>Jersey</td>
<td>0.01%</td>
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<tr>
<td>Guam</td>
<td>0.01%</td>
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<tr>
<td>Guadeloupe</td>
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<tr>
<td>Greenland</td>
<td>0.01%</td>
</tr>
<tr>
<td>Comoros</td>
<td>0.01%</td>
</tr>
<tr>
<td>Cayman Islands</td>
<td>0.01%</td>
</tr>
<tr>
<td>Burundi</td>
<td>0.01%</td>
</tr>
<tr>
<td>Brunei Darussalam</td>
<td>0.01%</td>
</tr>
<tr>
<td>Country</td>
<td>Percentage</td>
</tr>
<tr>
<td>-----------</td>
<td>------------</td>
</tr>
<tr>
<td>Bhutan</td>
<td>0.01%</td>
</tr>
<tr>
<td>Anguilla</td>
<td>0.01%</td>
</tr>
</tbody>
</table>
Appendix B

CC4D *Getting-to-Know-You* Survey Results
Getting-to-Know-You Initial Survey Results
Total Respondents = 2,898

1. Why are you participating in this course? (Please choose the response that is most important to you.)

<table>
<thead>
<tr>
<th>Reason</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>I have a personal interest.</td>
<td>1983</td>
</tr>
<tr>
<td>It is relevant to my educational goals.</td>
<td>584</td>
</tr>
<tr>
<td>It is relevant to my profession or my professional goals.</td>
<td>1100</td>
</tr>
<tr>
<td>It is relevant to other courses I am taking.</td>
<td>149</td>
</tr>
</tbody>
</table>

2. What specific background knowledge in the subject areas of the Climate Change in Four Dimensions course do you have? (Please select the one that best describes you.)

<table>
<thead>
<tr>
<th>Subject Area</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>General interest</td>
<td>1391</td>
</tr>
<tr>
<td>International</td>
<td>134</td>
</tr>
<tr>
<td>Policy</td>
<td>195</td>
</tr>
<tr>
<td>Scientific</td>
<td>798</td>
</tr>
<tr>
<td>Social Sciences</td>
<td>302</td>
</tr>
<tr>
<td>Other</td>
<td>82</td>
</tr>
</tbody>
</table>

3. What previous subject area knowledge of climate change do you have? (Please select the one that best describes you.)

<table>
<thead>
<tr>
<th>Knowledge Description</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>College/university course(s) including aspects of climate change subject areas.</td>
<td>1155</td>
</tr>
<tr>
<td>High school experience with climate change subject area courses.</td>
<td>184</td>
</tr>
<tr>
<td>No formal climate science or climate change training, but I have read and learned about it on my own.</td>
<td>1209</td>
</tr>
<tr>
<td>I have little or no prior education or knowledge of climate change subject areas.</td>
<td>338</td>
</tr>
</tbody>
</table>

4. Have you taken online courses before? (Please select all that apply.)

<table>
<thead>
<tr>
<th>Course Type</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Massive Open Online Courses (MOOC)</td>
<td>1330</td>
</tr>
<tr>
<td>Online course for credit</td>
<td>526</td>
</tr>
<tr>
<td>Online course NOT for credit</td>
<td>778</td>
</tr>
<tr>
<td>I’ve never taken an online course or MOOC before.</td>
<td>910</td>
</tr>
</tbody>
</table>

5. What are the three most important reasons that you are taking this MOOC? (Please only select the three that best describe you.)

<table>
<thead>
<tr>
<th>Reason</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ability to drop out without repercussions</td>
<td>181</td>
</tr>
<tr>
<td>Reason</td>
<td>Count</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>-------</td>
</tr>
<tr>
<td>Career advancement</td>
<td>646</td>
</tr>
<tr>
<td>Construct knowledge</td>
<td>1800</td>
</tr>
<tr>
<td>Curiosity</td>
<td>1301</td>
</tr>
<tr>
<td>Dislike the traditional school systems</td>
<td>112</td>
</tr>
<tr>
<td>Eager to take charge of my learning</td>
<td>540</td>
</tr>
<tr>
<td>Expand my professional/academic network</td>
<td>712</td>
</tr>
<tr>
<td>Explore climate change sciences as a career path</td>
<td>722</td>
</tr>
<tr>
<td>Flexible schedule</td>
<td>895</td>
</tr>
<tr>
<td>Financial considerations (low or no cost)</td>
<td>661</td>
</tr>
<tr>
<td>Life-long learning</td>
<td>1450</td>
</tr>
<tr>
<td>Meet other people who have similar interests</td>
<td>238</td>
</tr>
<tr>
<td>Other</td>
<td>112</td>
</tr>
</tbody>
</table>

6. What is your gender? (Please select the one that best describes you.)

<table>
<thead>
<tr>
<th>Gender</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>1431</td>
</tr>
<tr>
<td>Male</td>
<td>1437</td>
</tr>
</tbody>
</table>

7. What is your age? (Please select the one that best describes you.)

<table>
<thead>
<tr>
<th>Age Range</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>5-15 years</td>
<td>18</td>
</tr>
<tr>
<td>16-21 years</td>
<td>197</td>
</tr>
<tr>
<td>22-29 years</td>
<td>981</td>
</tr>
<tr>
<td>30-39 years</td>
<td>690</td>
</tr>
<tr>
<td>40-49 years</td>
<td>353</td>
</tr>
<tr>
<td>50-59 years</td>
<td>325</td>
</tr>
<tr>
<td>60-69 years</td>
<td>257</td>
</tr>
<tr>
<td>70-79 years</td>
<td>68</td>
</tr>
<tr>
<td>80-89 years</td>
<td>7</td>
</tr>
<tr>
<td>90 years or older</td>
<td>0</td>
</tr>
</tbody>
</table>

8. What is your educational background? (Please select the highest level you have attained.)

<table>
<thead>
<tr>
<th>Educational Background</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary school</td>
<td>18</td>
</tr>
<tr>
<td>Secondary school diploma</td>
<td>105</td>
</tr>
<tr>
<td>Taking college courses</td>
<td>235</td>
</tr>
<tr>
<td>College degree</td>
<td>756</td>
</tr>
<tr>
<td>Graduate degree</td>
<td>1476</td>
</tr>
<tr>
<td>Doctoral degree</td>
<td>296</td>
</tr>
</tbody>
</table>
9. What is the primary language you speak at home? (Please select the one that best describes you.)

<table>
<thead>
<tr>
<th>Language</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arabic</td>
<td>35</td>
</tr>
<tr>
<td>Bengali</td>
<td>35</td>
</tr>
<tr>
<td>English</td>
<td>1376</td>
</tr>
<tr>
<td>French</td>
<td>89</td>
</tr>
<tr>
<td>German</td>
<td>78</td>
</tr>
<tr>
<td>Hindi</td>
<td>79</td>
</tr>
<tr>
<td>Japanese</td>
<td>17</td>
</tr>
<tr>
<td>Malaysian-Indonesian</td>
<td>28</td>
</tr>
<tr>
<td>Portuguese</td>
<td>119</td>
</tr>
<tr>
<td>Russian</td>
<td>55</td>
</tr>
<tr>
<td>Spanish</td>
<td>347</td>
</tr>
<tr>
<td>Mandarin</td>
<td>57</td>
</tr>
<tr>
<td>Other</td>
<td>587</td>
</tr>
</tbody>
</table>

10. Is English your primary language?

<table>
<thead>
<tr>
<th>Answer</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>1404</td>
</tr>
<tr>
<td>No</td>
<td>1478</td>
</tr>
</tbody>
</table>

11. How do you think you will participate in this course? (Please select the one that best describes you.)

<table>
<thead>
<tr>
<th>Participation</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>I might become active for a few topics within the course that I’m involved in professionally, but I probably will not attempt to complete the entire course.</td>
<td>309</td>
</tr>
<tr>
<td>I plan to fully participate in the MOOC, including reading and listening to content, taking quizzes and exams, taking part in activities such as writing assignments, and actively participate in discussions.</td>
<td>1676</td>
</tr>
<tr>
<td>I want to enroll and observe or sample a few items.</td>
<td>195</td>
</tr>
<tr>
<td>I want to find content that I am personally interested in. I probably won’t attempt to complete the entire course.</td>
<td>460</td>
</tr>
<tr>
<td>I want to take this course for credit (UC San Diego Extension Certificate).</td>
<td>90</td>
</tr>
<tr>
<td>Other</td>
<td>164</td>
</tr>
</tbody>
</table>
12. What is your preferred method of social media? (Please select the one that best describes you.)

<table>
<thead>
<tr>
<th>Social Media</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Facebook</td>
<td>1885</td>
</tr>
<tr>
<td>LinkedIn</td>
<td>478</td>
</tr>
<tr>
<td>Twitter</td>
<td>271</td>
</tr>
</tbody>
</table>

13. What is your employment status? (Please select the one that best describes you.)

<table>
<thead>
<tr>
<th>Employment Status</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Full time employment</td>
<td>1395</td>
</tr>
<tr>
<td>Part time employment</td>
<td>423</td>
</tr>
<tr>
<td>Retired</td>
<td>265</td>
</tr>
<tr>
<td>Seeking work</td>
<td>390</td>
</tr>
<tr>
<td>Not employed</td>
<td>415</td>
</tr>
</tbody>
</table>
Appendix C

CC4D End-of-Course Survey Questions
End of Course Student Survey Questions (survey taken online)

MOOC PARTICIPATION
Have you taken other Coursera-based MOOCs (massive online open courses)? Yes, No

COURSE ORGANIZATION & INTERFACE
Likert Scale unless otherwise noted.
1. The Course at a Glance helped me understand the structure of the course.
2. The course learning objectives were clearly communicated.
3. The course grading policy, activity rubrics, and deadlines were clearly communicated.
4. Clear directions were provided regarding required activities.
5. Weekly materials were available in a timely fashion.
6. Course pacing was appropriate.
7. The course created a sense of community
8. It was easy to navigate within the course.
9. I was able to access the video segments.
10. The course content matched course description.
11. The content in the course was easily accessible to me. I was able to easily get into the course and use all the course features.
12. If the course content did not match the course description, how do you think the course description could be improved? INPUT BOX
13. If content was not easily accessible, how could accessibility be improved? Select as many as apply: (Vision impaired, Hearing impaired, Motor skill impaired, Language, Other INPUT BOX)

COURSE CONTENT
Likert Scale unless otherwise noted.
1. The level of intellectual challenge in this course was above my abilities.
2. Professor #1’s lectures provided compelling, relevant content.
3. Professor #2’s lectures provided compelling, relevant content.
4. Professor #3’s lectures provided compelling, relevant content.
5. Professor #4’s lectures provided compelling, relevant content.
6. Professor #5’s lecture provided compelling, relevant content.
7. The course was open and adaptable to emergent ideas and current events (e.g. guest speakers during the weekly bridge sessions, announcement messages, discussion forums, social media).
8. The additional suggested resources (e.g., Web sites, videos, additional readings) increased my understanding of the subject.
9. The majority of the required readings were timely and current.
10. There were enough activities in the course.
11. There were enough quizzes and exams in the course.
12. It was important to me to complete the graded quizzes, test and activities.
13. Given my reasons for participating in the Climate Change MOOC, the MOOC met my expectation.

LEARNING ACTIVITIES
Likert Scale unless otherwise noted.

1. Group activities improved my understanding of the content.
2. Individual activities improved my understanding of the content.
3. The scored activities (e.g. Check Your Knowledge Quizzes & Weekly Quizzes, Weekly Activities, Mid-Term, Final) helped me to assess my progress.
4. Using the discussion forums was a useful learning/interaction tool for me during this course.
5. Using LinkedIn was a useful learning/interaction tool for me during this course.
6. Using Twitter was a useful learning/interaction tool for me during this course.
7. Using Facebook was a useful learning/interaction tool for me during this course.
8. I participated in one or more weekly bridge sessions. Yes, no
9. If you did not participate in the weekly bridge sessions, why not? (I was not interested in the weekly bridge sessions, I was not able to participate because I have other activities at that time, I was not able to participate because it was during an inconvenient time in my time zone, I did not participate because the session was full and I was not able to join, I did not participate because I did not have access to technology at that time of day, Other INPUT BOX
10. The weekly bridge sessions were a useful learning/interaction tool for this course.
11. My classmates’ contributions were important to my understanding of the content.
12. The course activities were relevant and meaningful to my life and the larger community.

Learning Support
My content questions were addressed by using: (Ask the Professor, FAQs, Discussion Forum, Weekly Bridge Sessions, Social Media, Google/Internet Search, Other INPUT BOX)

Likert Scale unless otherwise noted.

1. The weekly Study Guides were useful to me.
2. The course environment fostered a supportive community through the use of a variety of communication options (e.g. discussion forum, weekly bridge session, social media).
3. The course environment was sensitive to my individual needs (e.g. culture, views, motivation for taking the course).
4. How could the course environment have met your needs more fully? INPUT BOX

Looking Beyond This Course...

Likert Scale unless otherwise noted.

1. I will continue communicating with classmates beyond this course using Facebook, LinkedIn, or Twitter, or Other method(s).
2. I will pursue further education in this field.
3. As a result of this course, I will continue to pursue career opportunities in this field.
4. As a result of this course, I will increase my efforts to reduce my carbon footprint.
5. Based on my experiences, I will recommend this course to others.

**ADDITIONAL COMMENTS**
We appreciate your participation in the course and in this survey. Please tell us other ways you would suggest to improve this course? INPUT BOX

**REGARDING YOUR BLACKBOARD EARN CREDIT EXPERIENCE**

**Likert Scale**
1. I was able to reach the instructor to answer questions.
2. The instructor replied to my questions in the time frame stated in the course communication policy.
3. I felt my participation in the course was graded according to the course grading policy.
4. The course project proposal had clear guidelines for peer evaluation.
5. The course project was a meaningful academic challenge.
6. I felt I learned more by taking the course for credit.
7. Based on my experiences, I will recommend taking this course for credit to others.
Appendix D

CC4D MOOC Weekly Activity Descriptions
Week #1 Activity: What’s your carbon footprint?

Introduction:
A carbon footprint has historically been defined as "the total sets of greenhouse gas emissions caused by an organization, event, product or person." Many of our daily activities cause emissions of greenhouse gases. For example, we produce greenhouse gas emissions from burning gasoline when we drive, burning oil or gas for home heating, or using electricity generated from coal, natural gas, and oil. Greenhouse gas emissions vary among individuals depending on a person's location, habits, and personal choices. What are your annual carbon emissions? How do you compare to other people? How might you reduce your carbon emissions? Complete this activity and find out. Read more about carbon footprints here.

In this assignment, you will have the opportunity to:
- Calculate your annual carbon emissions using an online calculator.
- Explore how you might reduce your carbon emissions.
- Communicate with fellow MOOC participants to compare carbon emissions.
- Write a brief reflection in which you address several specific questions related to your own carbon emissions.

Step 1: Go to the Carbon Footprint site below to get an estimate of your personal or family’s greenhouse gas emissions. Calculate your carbon footprint by answering all the questions at this site: http://www.carbonfootprint.com/calculator1.html
To get the most accurate results, gather your recent electric, gas, and/or oil bills so you can use real numbers for your household’s energy consumption. Remember that your energy bills vary by season, so use an average of winter and summer values if you can. Allow yourself 10-15 minutes to enter the data.

Step 2: Now that you’ve calculated your carbon footprint, think about these questions:
- What steps can I take to reduce my carbon footprint?
- What are some steps my family or community can take to reduce our carbon footprint?
Explore the impact of taking various actions to reduce your emissions here:

**Step 3:** Compare your energy usage and carbon emission scores to other MOOC participants and discuss the following questions in the discussion forums and social media:

- How different are these scores?
- What are some possible reasons for the differences?
- What are some ways each of you might lower your energy usage and carbon emissions?

Share your results in the social media such as Facebook, Twitter, or LinkedIn.

![Social media icons](facebook/twitter/linkedin)

**Step 4:** Click the *Reflective Writing Activity* link below and respond to the following questions:

- In general, what did you learn about your own carbon emissions?
- Was this information surprising in any way?
- What are at least two actions you can take to reduce your energy usage and carbon emissions?

*Week 1 Required Activity Reflective Writing.*
Submit your Reflective Writing as directed. You’ll earn 5 points towards your grade in the course.
Week #2 Activity: What is meant by Scientific Consensus?

Introduction:

Think about what is meant by scientific consensus as you read these two papers. Both papers report on efforts to answer the question of whether there is scientific consensus on anthropogenic global warming (AGW) in the peer-reviewed scientific literature.

Paper 1: Find this article by John Cook here: http://iopscience.iop.org/1748-9326/8/2/024024/article

Paper 2: Find this article by Naomi Oreskes here: http://www.sciencemag.org/content/306/5702/1686.full

So, is there scientific consensus? Complete this activity and decide for yourself.

In this assignment, you will have the opportunity to:

- Think about what is meant by scientific consensus.
- Describe the methods that were used to collect data in each research study reported in the two papers.
- Describe how the results are reported in each paper.
- Describe the conclusions from each paper.

Step 1: Read each of the two papers listed above. Take notes about the research methods used in each of the two studies while reading. Include descriptions about how the results are reported and what conclusions were drawn.
Step 2: Use your notes to compare and contrast the methods used and results obtained in both papers.

Step 3: Share your thoughts in social media and discuss the following question in the discussion forums and social media such as Facebook, Twitter, or LinkedIn.

Is there scientific consensus on anthropogenic global warming (AGW) in the peer-reviewed scientific literature? Use the information you gleaned from reading the two papers to make your argument.

Step 4: Click the Reflective Writing Activity link below and respond to the following questions:
  • What is meant by scientific consensus?
  • What methods were used to collect data in each of the two research studies?
  • How are the results reported in each paper?
  • What are the conclusions from each study?

Week 2 Required Activity Reflective Writing.
Submit your Reflective Writing as directed. You’ll earn 5 points towards your grade in the course.
Week #3 Activity: The Climate Bathtub Simulation

Introduction:

This activity uses an animated, interactive simulation game that is found online. The simulation uses water in a bathtub to represent CO₂ in the atmosphere. The bathtub inflow represents emissions of CO₂, the outflow removals of CO₂. The water in the tub represents CO₂ in the atmosphere. The challenge is: Can you keep the bathtub from overflowing?

This simulation teaches several principles about the dynamics of the global carbon cycle and climate change.

In this assignment, you will have the opportunity to

- Improve your understanding of how changes in carbon dioxide emissions will affect levels of carbon dioxide in the atmosphere by running different scenarios of the simulation.

**Step 1:** Read the information (in your preferred language) on this web site to find out more about CO₂, climate change, and the way the simulation is designed.

Find detailed instructions about how the simulation works here. Use the Coach Notes and FAQs provided for additional explanations.

**Step 2:** Run the scenarios from here. Take notes about the purpose and results of each run.

**Step 3:** Now that you have run the scenarios, think about the following questions:

- Why is CO₂ in the atmosphere rising?
- What do emissions and removals have to be like to stabilize CO₂ in the atmosphere?
• What does overflow of CO\textsubscript{2} look like on the ground?
• Why is leveling emissions insufficient to stabilize CO\textsubscript{2} in the atmosphere?
• What does a significant reduction of emissions look like in the real world?

**Step 4:** The amount of carbon dioxide (CO\textsubscript{2}) in the atmosphere is increasing. The world is getting warmer. If this continues, the ecosystems and economies of the world will be dramatically altered. **What can be done about this?** Share your thoughts in the social media such as Facebook, Twitter, or LinkedIn.

![Social Media Icons](image)

**Step 5:** Click the Reflective Writing Activity link below and respond to the questions under Step 3. **Week 3 Required Activity Reflective Writing.**
Submit your Reflective Writing as directed. You’ll earn 5 points towards your grade in the course.
Week #4 Activity: Climate Change Policy Decisions in Your Country

Introduction:
Find out about climate change mitigation or adaptation efforts in your community, region, or country.

In this assignment, you will have the opportunity to:
• Research and analyze a policy implemented or under discussion in your community, region, or country that is intended to support the mitigation or adaptation efforts with regard to climate change.

Step 1: Select an example relevant to your community, region, or country from this table.

<table>
<thead>
<tr>
<th>Mitigation: Making changes to slow climate change by lowering the amount of greenhouse gases.</th>
<th>Adaptation: Making changes that enhance resilience or reduce vulnerability to changes in climate.</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Increase use of renewable energy (wind, solar, biomass) and combined heat and power installations.</td>
<td>• Investigate disaster risk reduction.</td>
</tr>
<tr>
<td>• Improve energy efficiency in buildings, industry, household appliances.</td>
<td>• Explore coastal zone management.</td>
</tr>
<tr>
<td>• Reduce CO₂ emissions from new passenger cars.</td>
<td>• Investigate agriculture and rural development.</td>
</tr>
<tr>
<td>• Abatement measures in the manufacturing industry.</td>
<td>• Expand health services.</td>
</tr>
<tr>
<td>• Measures to reduce emissions from landfills.</td>
<td>• Increase spatial planning.</td>
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<tr>
<td></td>
<td>• Investigate regional development.</td>
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<tr>
<td></td>
<td>• Explore ecosystems and water management.</td>
</tr>
<tr>
<td></td>
<td>• Use scarce water resources more efficiently.</td>
</tr>
<tr>
<td></td>
<td>• Adapt building codes to future climate conditions and extreme conditions.</td>
</tr>
</tbody>
</table>
weather events.
• Build flood defenses.
• Develop drought-tolerant crops.
• Choose tree species and forestry practices less vulnerable to storms and fires.
• Set aside land corridors to help species migrate.

Step 2: Research and find a local policy.

Step 3: Now that you have studied the policy, use these questions to analyze it:

• How will the policy support the effort?
• What are the tools used to implement the policy? (Consider examples such as taxes, subsidies, performance standards, and others.)
• How is the policy’s effectiveness measured?
• What are the key constraints for implementing the policy?
• How does the policy affect the economy?

Step 4: Share your results in the social media such as Facebook, Twitter, or LinkedIn.

Step 5: Click the Reflective Writing Activity link below and respond to the questions under Step 3. Week 4 Required Activity Reflective Writing.
Submit your Reflective Writing as directed. You’ll earn 5 points towards your grade in the course.
Week #5 Activity: “Six Americas” Climate Change Survey

Introduction:

The notion of “Six Americas,” a concept described in a 2009 Yale survey in which Leiserowitz’s research team found that Americans can be divided into six distinct groups according to their perspectives on climate change. Leiserowitz’s research asserts that in order to effectively combat global warming, climate scientists must learn to communicate differently with Americans in each group, including the Disengaged, the Doubtful, and the Dismissive.

Although this survey was originally designed for American audiences, most of the questions would also apply to people in other countries around the globe.

In this assignment, you will have the opportunity to:

• Find out what your friends and family think about climate change with the help of this survey.
• Report your results in the social media of the MOOC.
• Compare and contrast your results with survey results from other participants.

Step 1: Take the survey at this web site:
http://uw.kqed.org/climatesurvey/index-kqed.php

Step 2: Send the link to the survey to your friends and family. Have your friends report back to you on what group they belong to according to the survey results.
Step 3: Report, compare and contrast your results with survey results from other participants in Share your thoughts in the social media such as Facebook, Twitter, or LinkedIn.

Step 4: Click the Reflective Writing Activity link below and respond to some of these questions:

- What are the results of the survey for your friends and family?
- How do your survey results compare to the results from other participants?
- How do you think climate scientists should communicate with the general public?
- What are your conclusions from this activity?

Week 5 Required Activity Reflective Writing.

Submit your Reflective Writing as directed. You’ll earn 5 points towards your grade in the course.
Week #6 Activity: The Intergovernmental Panel on Climate Change (IPCC)

Introduction:

The Intergovernmental Panel on Climate Change (IPCC) website, is found here.

This Web site was set up to provide assessments of our understanding of the climate system and climate impacts. It is a major and authoritative source of information for people around the world about climate change research.

In this assignment, you will have the opportunity to find out:

- The person who won the Nobel Peace Prize in 2007.
- The role of the IPCC in the climate change discourse.
- The changes between the IPCC AR4 and AR5 reports.
- How climate change will affect your region according to the IPCC reports.

Step 1: Use the Impacts, Adaptation and Vulnerability Assessment Reports to research how climate change will likely affect your region. Note: The Climate Change 2014: Impacts, Adaptation and Vulnerability Assessment Report will be considered in Yokohama, Japan, in March 2014.

Step 2: Now that you familiarized yourself with the IPCC Web site, consider these questions:

- Who won the Nobel Peace Prize in 2007?
- What is the IPCC's role in the climate change discourse?
- What has changed between the IPCC AR4 and AR5 reports?
- In your view, what are the strengths and limitations of its mandate and processes?
- What did you find out about how climate change will affect your region in the IPCC reports?
- Share your thoughts in the social media such as Facebook, Twitter, or LinkedIn.
Step 3: Click the Reflective Writing Activity link below and respond to the questions under Step 2. Week 6 Required Activity Reflective Writing. Submit your Reflective Writing as directed. You’ll earn 5 points towards your grade in the course.
Week #7 Activity: Trusted Communicator

Introduction:
Mainstream climate science is under attack from sceptics. Some people believe there is still a major scientific debate. Trust in science has suffered as a consequence. It is therefore not enough to present scientific information without the endorsement of other trusted sources.

Because climate change communication is so strongly based on predictions, it is vital that the communicator is trusted. One person considered by many to be a trusted communicator is the Dalai Lama.

In this assignment, you will have the opportunity to:
- Describe a trusted communicator who addresses climate change issues in your community.

Step 1: Describe a trusted communicator who speaks about climate change for a specific audience in your community. Think of someone who would be trusted to talk with diverse groups such as students, business people, or senior citizens.

Step 2: Describe why he or she is or would be trusted.

Step 3: Describe what information you would give to this trusted person to make sure he or she is well informed and doesn’t circulate false information.

Step 4: Share who you would ask to be a trusted communicator and why in the social media such as Facebook, Twitter, or LinkedIn.

Step 5: Click the Reflective Writing Activity link below and respond to the following questions:
• Why is the person you describe a trusted communicator to discuss climate change issues in your community?
• What specific audience would this person best be suited to talk to?
• What information would you give to this trusted person to make sure he or she is well informed and doesn’t circulate false information?

**Week 7 Required Activity Reflective Writing.**
Submit your Reflective Writing as directed. You’ll earn 5 points towards your grade in the course.
Week #8 Activity: A Sustainable Future

Introduction:
There are many simple things each of us can do to help reduce our environmental impact.

On a larger scale, there is optimism that in a changing climate, a sustainable future can be achieved.

In this assignment, you will have the opportunity to:

• Explore something to change in your daily life to help live in a more sustainable way.
• Discuss how you might work on a larger project in your country or around the globe that would contribute to the stabilization of Earth’s climate and a sustainable future.

Step 1: Start at the Worldwatch Institute site and read about “10 ways to go green and save green.” Use the list on the Web site to help you find at least three simple things you could change in your daily life to help live in a more sustainable way.

Step 2: Watch Hope in a Changing Climate - by John D. Liu (2009)
Find any similar project in your country or elsewhere that you would be interested in getting involved with.

Step 3: Share your findings with fellow participants in the course on the discussion forums and in the social media.

Step 4: Click the Reflective Writing Activity link below and respond to the following question:

• How have you changed activities in your daily life to help live in a more sustainable way? Explain.
• What larger scale project to create a sustainable future would you like to work on? Why?

Week 8 Required Activity Reflective Writing.
Submit your Reflective Writing as directed. You’ll earn 5 points towards your grade in the course.
Introduction:

Geoengineering can be defined as the deliberate, large-scale manipulation of an environmental process that affects Earth’s climate, in an attempt to counteract the effects of global warming. The use of geoengineering to combat climate change is largely untested. However, we may have to consider geoengineering. What will that mean?

As it relates to climate change, geoengineering falls into two categories: solar radiation management and carbon dioxide removal. Solar radiation management involves reflecting solar radiation back into space. Carbon dioxide removal is aimed at removing carbon dioxide from the atmosphere and storing it.

The Intergovernmental Panel on Climate Change’s Summary Statement for Policymakers (WG1AR5 page 29) mentioned geoengineering for the first time in the panel’s 25-year history.

In this assignment, you will have the opportunity to:

• Comment on your thoughts about geoengineering.

**Step 1:** Read news articles about the significance of the IPCC’s Summary Report for Policymakers inclusion of geoengineering. Here are two examples:

*The IPCC and Geoengineering*

*Latest IPCC Climate Report Puts Geoengineering in the Spotlight*
Step 3: Report to other students in the discussion forums and social media what you found out.
Step 4: Click the Reflective Writing Activity link below and respond to the following questions:

- In your opinion, what is the reason the IPCC Summary Report for Policymakers mentions geoengineering?
- What is your position on geoengineering?

Week 9 Required Activity Reflective Writing.
Submit your Reflective Writing as directed. You’ll earn 5 points towards your grade in the course.
Week #10 Activity: Mitigation

Introduction:
Here’s a dictionary definition of the greenhouse effect:

“The phenomenon whereby the Earth’s atmosphere traps solar radiation, caused by the presence in the atmosphere of gases such as carbon dioxide, water vapor, and methane, that allow incoming sunlight to pass through but absorb heat radiated back from the earth's surface.”

In this assignment, you will have the opportunity to:

• Make a prediction of how greenhouse gases affect the global surface temperature.

• Answer questions about greenhouse gases.

Step 1: Follow the link to the greenhouse effect simulation. (Before you begin the simulation, know about the software requirements: Windows XP/Vista/7; Macintosh OS 10.5 or later; Sun Java 1.5.0_15 or later.)

Run the simulations in order to answer some of these questions:

• How does a reduction in CO₂ emissions affect the global surface temperature?

• What happens when you add clouds or glass panes?

• Do all gases contribute to the greenhouse effect? Which ones do? Which ones do not?

• How do photons interact with atmospheric gases?

If you cannot run the simulation please use this site to answer the questions. (Note that you will need Flash to watch this video on this page.)

Step 2: Discuss this question: How do greenhouse gases affect the global surface temperature? in the relevant discussion forums, and social media such as Facebook, Twitter, or LinkedIn.
Step 3: Click the Reflective Writing Activity link below and respond to the questions from Step 1. Week 10 Required Activity Reflective Writing. Submit your Reflective Writing as directed. You’ll earn 5 points towards your grade in the course.
Appendix E

CC4D MOOC Activity Reflection Student Samples
Week #1 Activity - Carbon Footprint SAMPLE RESPONSES

SAMPLE RESPONSES FROM studentS RECEIVING NO CREDIT

· Dhaka, Bangladesh ·

I am very general people from Bangladesh where average carbon footprint is less than 1 and I am surprised to found mine is 7.3. I travel a lot and use both motorbike and car simultaneously. We are only two person’s family and use very low electricity and gas because we don’t use AC or room heater. Also we buy natural food and use green products very consciously. Now it becomes so difficult for me to reduce my travel plan. I have to travel for my business and I stared to take a walk to my office from home and when need to meet my clients use only bike rather than car from my home parking only.

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· Athens, Greece ·

Hello,
I live in Greece and my motivation for taking this course is to update my knowledge for work-related purposes. I just completed the activity for week 1 and my carbon footprint is 7.61 metric tons per year. This is fortunately lower than the national average but I need to do better...or get a better calculator I eat very little meat, I purchase locally grown organic fruits and veg with no packaging, grow some of my own food, compost and recycle... It just makes me wonder how willing communities would be to make the necessary changes. This reinforces my commitment toward spreading greater awareness.

---

Dear all
This is my carbon footprint calculated from household and motorbike.
The score is 1.92 metric tons of CO2.
1-My carbon footprint is not far from the 2 metric tons of carbon target.
2-My carbon footprint is very high compared to the national average
3-This value be explain by the electricity cost

---

I live in Ecuador, and this is my carbon footprint.
House 0.66 metric tons of CO2e
Flights 1.96 metric tons of CO2e
Car 0.52 metric tons of CO2e
Motorbike 0.00 metric tons of CO2e
Bus & Rail 0.00 metric tons of CO2e
Secondary 3.96 metric tons of CO2e
Total = 7.10 metric tons of CO2e

The thing that is most noticeable to me it’s that about a third of my carbon footprint is from traveling home twice a year to visit my family in the US. However, the largest
portion of my footprint is from secondary sources that are not specified. I wish that portion were expanded further.

---

The concept of a CARBON FOOTPRINT is based on emissions associated with CONSUMPTION. It is important to keep this in mind when calculating a carbon footprint, particularly for the INDIRECT components (see the Wikipedia article "Carbon footprint"). So, for example, if I buy (fossil fuel) gasoline for my car, so that I can drive to visit a friend or buy some food to eat, the emissions from my car are a direct contribution to my personal carbon footprint. On the other hand, if I use that fuel to deliver a product that my employer has sold to his customer, the emissions do not belong to me, so they do not contribute to my carbon footprint; I am not the consumer associated with these emissions. Similarly, if I buy an apple and eat it, there are some emissions associated with producing and delivering that apple to me, and these emissions are an indirect contribution to my carbon footprint.

Carbon taxes give us a clue to indirect contributions to carbon footprints. Typically, a carbon tax is applied to the initial supplier of a fossil fuel, the coal mine owner, or the oil well owner, or the natural gas well owner, as the fuel is delivered to the initial buyer. That initial buyer then pays a little more for the fuel, so that the supplier can pay the carbon tax. As the fuel follows its path to the consumer(s), at each sale on the way a portion of the price covers the carbon tax. Ultimately it is the consumer who both pays the tax and receives the footprint contribution. Follow the money if you want to understand the footprint.

Based on www.carbonfootprint.com/calculator1.html, my personal carbon footprint is 11.2 tCO2e (tonnes of carbon dioxide equivalent), 54% of which was the secondary (indirect) component, and 22% was from air travel. As a resident of the United States of America, my footprint was well below the US average, essentially at the average for industrialized nations, but very far above the target of 2 mtCO2e that represents the equilibrium needed (with the present world population of 7 billion) to stabilize global warming.

As an individual, I will have difficulty in reducing my carbon footprint. I already drive a plug-in hybrid electric vehicle (which was not listed on the website) whose emissions, both from the tailpipe and from the power plant, are equal to those from an ordinary car with a gasoline fuel efficiency of 59 miles per gallon. This is in part because about 2/3 of my miles are powered by electricity, and in California the power plants are cleaner than most. I also have exchanged many of my incandescent light bulbs for compact fluorescents, but I still have several on dimmers which I will replace with LEDs when the price comes down, perhaps in two years.

Other than that, there are two things I can do: try to convince our political leaders to (1) force the replacement of all fossil fuel power plants by clean ones (renewables and nuclear), and (2) embark on a major program to replace all conventional cars and light trucks with plug-in hybrids. This last one would save 6 million barrels of oil every day.

---

**Step 1:** Calculate your carbon footprint by answering all the questions on the website.

My estimated greenhouse gas emissions are **16 tons** of carbon dioxide (CO2) equivalent per year, which is **below the U.S. national average**.

The breakdown is as follows:

Home Energy (16.0%)
Driving & Flying (50.9%)
Recycling & Waste (7.4%)
Food & Diet (25.7%)

**Step 2:** Now that you’ve calculated your carbon footprint, think about these questions:

a) What steps can I take to reduce my carbon footprint?
   - By using energy saving lights in my home
   - By using buses instead of personal car most of the week
   - By recycling most of my domestic waste
   - By eating food that requires less energy for heating

b) What are some steps my family or community can take to reduce our carbon footprint?
   - They can reduce our carbon footprint by felling a few trees and planting more
   - By investing in green products
   - By recycling most household wastes
   - Reducing the burning of fossil fuels especially changing the mode of transportation or commuting.

c) Explore the impact of taking various actions to reduce carbon emissions
   - Green products ensure a safer environment with less pollution from fossil fuels.
   - Recycling is an efficient way of reducing energy consumption for production of goods and services
   - Public commuting will go a long way to reduce the amount of fossil fuels burnt each day when personal cars are used.

**Step 3:** Compare your energy usage and carbon emission scores to other MOOC participants and discuss the following questions in the discussion forums and social media:

a) How different are these scores?
   - The scores are quite different across different countries.

b) What are some possible reasons for the differences?
   - Some countries generate cleaner energy than others
   - Lifestyle is also another major factor

c) What are some ways each of you might lower your energy usage and carbon emissions?
   - We should conserve and promote green environments
   - We should change the choices we make as well as our lifestyles

---
Ugh. For a family of 4, our carbon footprint is a shocking 20.1 mTons, just about equal to the American average. I self-righteously thought we would be much lower. We grow much of our own food, raise our own meat, have no TV, installed geothermal heating system, drive fuel efficient cars, and buy nearly everything used. Where did we go wrong?

Our geothermal system uses a lot of electricity, which helped put our home at 2.6 mT. And the food we raise goes into 2 old chest freezers for storage - both real energy users. But the real killer is in our vehicle use (11.5 mT). We live on a farm where we can raise our own veggies, and our own grass fed beef and poultry. By definition that means that we're going to put serious miles on a vehicle or two and own a chest freezer or two. What to do? It's a win-lose situation.

We also took a big hit on our Secondary factors (4.88 mT). I'm not sure I agree with the algorithm on that section. Is it better to buy ONLY organic, even if it means that food is being shipped across the country? or processed? And the vehicles haunt you again in that category, since # owned counts against you. But all of our vehicles are second hand . . . we use them, but they weren't manufactured for us.

Also, there is no way to factor in offsets: the trees we've planted, the number of appliances we do without, the re-using of old vehicles rather than buying new.

In spite of my quibbles with the calculator, it was an exceedingly useful exercise. I've been chasing around the house for 2 days - turning off lights! We will certainly be paying more attention to light usage. I can try to cut down on mileage as well, though I already work hard to combine trips. But frankly, when the nearest grocery store is 20 miles round trip, the post office is 6 miles round trip and even the lane from farm to mailbox is 1 mile round trip, cutting mileage to the level needed to significantly lower our footprint will be tough. The carbon footprint calculator is also mighty discouraging though . . . my family works pretty hard to 'live lightly' on the planet yet the ability to cut to 2 mTs is impossible unless serious changes are made to energy and transportation infrastructures, particularly in rural areas.

SAMPLE RESPONSES FROM studentS RECEIVING CREDIT

My carbon footprint was 15. Mostly due to my large gas guzzling vehicle and electricity. As I read thru the posts I can see that a lot have misunderstood the meaning of CO2e, as it was not explained in the site. CO2e means CO2 equivalent, which means that all the GHGs have been converted to CO2 by multiplying with their respective Global Warming Potential (GWP). Example CH4 (methane) is multiplied by its GWP of 21 to convert to CO2e. In my next post I will show the link of the GWPs of all the GHGs...

2. In response to some of our participants' question whether the emissions are for the whole family or per person, I took the liberty of answering, based on my experience in my work in GHG inventory. The answer is: the emission given in the exercise is PER PERSON. At the bottom, it explains that the emission in your house from electricity and other fuels, it is divided by the number of people in your household.

3. We need to understand some few important notes on our carbon footprint. I am sharing this, from my experience in my work in energy-environment modeling and planning, carbon market, GHG mitigation, and GHG inventory.

Our emissions are divided into 3:
Scope 1 - these are our own emissions such as fuel combusted in our own car, fuel in cooking (LPG), etc. In short these are direct emission within your boundary and your personal owned
vehicles and equipment like LPG cooking stove, diesel generators, etc.

**Scope 2** - Energy that you buy (electricity, heat, etc.). It is important to classify this as scope 2, as the power company that supplies to you will report this as their scope 1. This is to avoid double counting, when we have to total the country’s GHG emission only scope 1 emissions should be included.

**Scope 3** - all other emission except Energy (scope 2 above) from things and services that you buy or use. In the carbon footprint exercise that we did these are under secondary item. These scope 3 emissions are actually the scope 1 emission of the respective companies that produced the products and services.

When I have the time I am willing to discuss and explain further about the correct methodology of GHG inventory and personal carbon footprint.

---

My carbon footprint is quite high compared to the average for the county I live. I will have to reduce by C)2 emission by 8%, if I am to reach the world target.

*I never realized using a six year old car adds so much CO2, that's an eye opener.*

---

Hi there
My carbon emissions were 6.55 metric tons, which is below average for my country - Canada.

If you use this link to peruse the chart on the site:


you will see that the higher emissions are from the big oil producing provinces in Canada e.g. Alberta or Sask. The oil and gas are cheaper to buy there. Presumably people buy more oil and gas, use more oil and gas because it is less expensive. I'm from the East side of Canada, and oil and gas prices are more expensive here, so people tend to use less of them.

Usually, people are more likely to change if an issue personally affects them. Therefore, if fuel was more expensive, people may be more inclined to use less of it. In the long term, they would save money, and it would be better for the environment.
Week #2 Activity – Scientific Consensus SAMPLE RESPONSES

SAMPLE RESPONSES FROM students RECEIVING NO CREDIT:
Scientific consensus is essentially agreement among experts in a field, and the IPCC in its latest assessment of peer reviewed research (AR5) has described “the warming of our climate system as unequivocal” due to such a consensus. In much the same vein all major scientific societies have released statements over many years supporting this position.
Two inductive research studies have analysed peer reviewed scientific papers using the search terms “global climate change” and “global warming”. Oreskes (2004) looked at 928 peer reviewed papers published between 1993 and 2003 using the search term “global Climate change” and found not one paper challenged the science. Cook et al built on this research scanning a longer period from 1991 to 2011 but added the search term “global warming”. This study of over 12000 papers looked at type of research and the level of endorsement, explicit, implicit or no position on global warming. Over 4000 papers stated a position on global warming with 97.1% endorsing the consensus. Scientists were also asked to self rate their papers and of the 2000 papers the endorsement of the consensus increased to 97.2%. These and other studies have shown repeatedly that there is an overwhelming consensus on global warming from climate scientist who do research in the field and have it peer reviewed. Alternatively you have the skeptics who front up to interviews or spew forth their unchecked facts and opinions in certain media outlets.

A concerning gap remains in the public perception of this scientific consensus, a gap that derails public policy and action to mitigate climate change. Through well funded and highly organised campaigns the science is continually challenged with doubts raised, all of which has succeeded in misinformed the public about the solid scientific consensus.

Whilst we can never have 100% certainty both individual action and the demands of public policy dictate otherwise. We regularly submit to expert opinion across a host of areas including court proceedings and medical diagnoses. Were I to go to my doctor, who after thoroughly examining me advises a harsh treatment schedule and life changing procedure I am free to get other specialist opinion. If a further 90 specialists confirm the original diagnosis and recommended treatment but 2 consultants advise differently, eg chants under a full moon and the application of miraculous snake oil, I and most people would accept the consensus of medical opinion and take the tough medicine. But who know? One day we may discover that roasted ants and lemon juice mixed in feral cats’ blood may also have done the trick, but when one’s life is at stake decisions and actions are no longer theoretical. Life is for the decisive and splitting hairs can negatively impact on our health and safety.

It’s best to avoid the quacks and snake oil salesmen, and climate change science deniers, but aren’t they the same thing.

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“Scientific Consensus represents the position generally agreed upon at a given time by most scientists specialized in a given field” (GreenFact, 2013). It simply means that all scientists do not have to be undivided in their evidences, but disagreements are inevitable which can be necessary for the progress of science.
The method used in the paper by John Cook et al. to collect data is the inductive model which involved examining 11,944 climate abstracts from 1991–2011 matching the topics 'global climate change' or 'global warming by eliminating papers that were not peer-reviewed, not climate-related or without an abstract. On the other hand, the method used in the paper by Naomi Oreskes is the hypothetico-deductive model which involved testing the hypothesis of man-made global warming by analyzing 928 abstracts.

John Cook et al. result was reported in the peer-reviewed scientific literature, examining 11,944 climate abstracts from 1991–2011 matching the topics 'global climate change' or 'global warming', while Naomi Oreskes result was published in refereed scientific journals between 1993 and 2003, and listed in the ISI database with the keywords “climate change.

John Cook et al. concludes that among the papers expressing a position on anthropogenic global warming (AGW), an overwhelming percentage (97.2% based on self-ratings, 97.1% based on abstract ratings) endorses the scientific consensus on AGW. Consequently, Naomi Oreskes states that the IPCC's conclusion on most of the observed warming of the last 50 years is likely to have been due to the increase in greenhouse gas concentrations which accurately reflects the current thinking of the scientific community on this issue. Therefore, each paper concluded that global warming is caused by humans.

Reference:

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Short answer to "Is there consensus among scientists about anthropogenic climate change" appears to be a resounding "yes". Scientific consensus is not a popularity contest and it is never meant to close the door on further questioning and further research. However, special interests who have a vested incentive to squelch climate studies exploit the natural, fundamental nature of scientists to couch the results of their studies in nuanced, measured, equivocal language as a way to manipulate public opinion and prevent action on what the majority of scientists believe without question is one of the more pressing issues of our day.

Both John Cook and Naomi Oreskes collected reports and studies about climate change to find out just what the scientists themselves were saying. Cook had a much larger sample: where Oreskes reviewed just over 900 papers, Cook reviewed around 12,000. Oreskes, in addition, mentioned the work of numerous scientific organizations that explicitly endorse the concept of AGW: including the IPCC, and “the American Meteorological Society, the American Geophysical Union), and the American Association for the Advancement of Science (AAAS) [who all] issued statements” endorsing climate change.

The biggest difference in how they reported their findings was the inclusion of numerous charts and graphs in Cook's paper, that wasn't in Oreskes. Both stated "unequivocally" that the consensus is there. Period. As Cook pointed out, scientists don't typically state what is already assumed to be true: they focus on areas where there is still unanswered questions, “rather than on matters about which everyone agrees." Unfortunately, deniers use that approach as a means to poke holes i the consensus. One method they employ that should raise flags for anyone still wondering who is right: the skeptics don't take their argument to other scientists: they don't write peer reviewed reports. They take their naysaying to the public, and the media, who aren't as sophisticated in analyzing the holes in their arguments. They also exploit the media's function in creating "balanced" journalism, by insisting that the views of a tiny minority be given the same air time as the views of 97% of the rest of the scientific community, thus obfuscating the real message and confusing the public.
SAMPLE RESPONSES FROM students RECEIVING CREDIT

Here's my comment for the activity in Week 2 - There is a consensus that there is Anthropogenic Global Warming (AGW), aside from the 2 papers that we read, the IPCC (with its scientists and governments agreeing), plus the fact that there are climate disturbances happening. I will also post in the comment below, a graph which shows that since year 1750, when industries started to emit greenhouse gases (GHGs), and these are considered man-made or anthropogenic, the GHGs expressed as CO2 in ppm, have increased significantly.

Although there was a cyclic cooling and warming of the Earth in the past, the rate of warming and cooling is now happening at a faster rate.


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One of the main problems with consensus is that AGW is a broad topic that covers many disciplines. There are also details about the future and even current events that are not settled science. For example, Jennifer Francis and Ken Trenberth have a disagreement about whether thinning sea ice is causing extreme weather. Both of them agree that AGW is dangerous and we need to act immediately, but "skeptics" can and do use disagreements like this to portray the whole package of climate science as unsettled.

---

Paper one and Paper two seemed to have used an Induction method - collecting data. Hundreds and hundreds of papers were analyzed, and it was found that over 97% of scientists agree that humans are causing global warming. By analyzing many, many papers it allows for in depth criticism, correction and revisions. Both of the papers came to to same conclusion that humans are causing global warming, also they agreed that there are certain corporations that fund campaigns to discredit the scientific consensus on human made global warming. Many members of the public still are unsure or do not understand global warming, so this misinformation just fuels their disbelief even more. At the end of the day, the big fossil fuel companies do not want to lose money, by people cutting back (to try to reduce CO2 emissions) and not buying fuel. They know if there was a consensus of general public who believed in human made global warming it would hurt their business.

Two different papers by different people, support each other. They are in consensus - general agreement. Also all of the papers sampled support each other.

Predictions by climate models have been compared with actual observations and measurements, which compliments how well models are representing the real world. An example, of how many different tests support, and provide evidence for each other.
Week #3 Activity - The Climate Bathtub Simulation SAMPLE RESPONSES

SAMPLE RESPONSES FROM students RECEIVING NO CREDIT
1. Why is CO2 in the atmosphere rising?
   · CO2 in the atmosphere is rising because there is more emission than removal. In other words, emissions exceed removals.

2. What does overflow of CO2 look like on the ground?
   · An overflow of CO2 on the ground looks like the flows are out of balance. This is because there is more CO2 entering the atmosphere, with more than half far from being removed. It therefore means that the amount of CO2 in the atmosphere has increased to the point of significantly altering the climate.

3. Why is levelling emissions insufficient to stabilize CO2 in the atmosphere?
   · The reduction of greenhouse gas emissions to 5.2% by industrialized countries will roughly level off CO2 emissions, but this is not enough to prevent CO2 levels from going above 450 ppm. This is because the rate of reduction in emissions is not up to 50%. Since emissions are greater than removals, each year more CO2 enters the atmosphere than is removed. So the amount of CO2 in the atmosphere continues to rise.

4. What does a significant reduction of emissions look like in the real world
   · In the real world, a significant reduction of emissions would mean no more burning of fossil fuels as well as no more felling of trees (deforestation).

5. The amount of carbon dioxide (CO2) in the atmosphere is increasing. The world is getting warmer. If this continues, the ecosystems and economies of the world will be dramatically altered. What can be done about this?

   There is the need to reduce emissions to the point where emissions from fossil fuels and deforestation equals removals of CO2 into oceans and plants. This will stabilize levels of CO2 in the atmosphere.

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The Climate Bathtub Simulation for Week 3 is really interesting and the results surprised me.

- Allows the increase of CO2 emissions
  In the first simulation if it continues rising CO2 in the atmosphere after 2007, by 2040 it will have surpassed the threshold of 450 ppm. The bathtub overflows in 2045 and would experience an even greater climate change. This future is expected by IPCC scientists if we make major changes to prevent climate change.
- Stabilize CO2 emissions
  In the second simulation if CO2 emissions remain in the atmosphere after 2007, in 2045 it will have surpassed the threshold of 450 ppm. We have gained only a little time. The bathtub overflows in 2050.
- Reduce CO2 emissions
  In the third simulation if emissions of CO2 in the atmosphere were reduced after 2007, by 2070
the threshold of 450 ppm would be reached but not exceeded. Therefore not overflow the bathtub.

Why is CO2 in the atmosphere rising?

Humans are contributing to the rise of CO2 in the atmosphere due to fossil fuel use and increase deforestation. More CO2 is released to the atmosphere, but it is not being eliminated thereby increasing more and more that amount.

What does overflow of CO2 look like on the ground? (I don’t really understand that question here)

Why is leveling emissions insufficient to stabilize CO2 in the atmosphere?

Because the emissions are not reduced to the level of the removals. After 2045 emissions continue to increase. At that point removal also balances year after year. But as the emissions are larger than removals, each year comes more CO2 in the atmosphere is eliminated. So the amount of CO2 in the atmosphere is increasing.

What does a significant reduction of emissions look like in the real world?

To stabilize the atmospheric CO2 emissions equaling with removals, it will require a significant reduction (over 50%) of emissions.

The amount of carbon dioxide (CO2) in the atmosphere is increasing. The world is getting warmer. If this continues, the ecosystems and economies of the world will be dramatically altered. What can be done about this?

Individually there are many actions we can take to reduce our ecological footprint and help produce less CO2 and thus combat global warming. Use clean transport, car sharing, save energy and water at home, recycling, etc... Globally we should involve more people and governments must implement effective policies that promote clean energy and words become actions.

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Sandra, I am happy you brought up the "obese planet" analogy because it mirrors so provocatively (and with a sort of morbid, and not unreasonably so, realism) the kind of pathological denialism and fatally addictive personality impeding decisive progress on climate change action. As per the "easy fix" impulse you made mention of, I find it deeply disturbing that there is as much budding curiosity about, and preliminarily affirmative literature on, geoengineering as an alternative to conventional mitigation and adaptation strategies. In my opinion, a fixation on geoengineering as a viable approach to dealing with severe global climate change not only represents a kind of perverse escapism, but also inclines, in the greater picture, towards a slippery slope. Aside from suggesting an underlying hubristic mentality, relying on geoengineering as a crutch or escape hatch upon the overflow point does not fundamentally challenge us to overhaul existing systems of destructive economic growth; unsustainable consumption; intensive energy expenditure; and so forth. Diet pills, by the way, may produce short-term, seemingly desirable results (if even that) but have been shown to run a substantial risk of triggering potentially toxic, long-term damage to the body's natural defenses or regulatory processes. Climate change problem-solving is a quintessentially risky business as there is no precedent to look to for reference; consequently, we have to choose wisely which risks we're willing to take, with the help of legitimate scientific counsel. Prudence and dangerous hesitation, however, cannot be taken as one and the same thing.
What the bathtub simulation so effectively conveyed to me was that there can be no half-assed (to be crude) or middle-of-the-road (less crude) approaches if we want to re-stabilize the climate system to a point well below the "last ditch" upper threshold of 450 ppm; as demonstrated by the ineffectiveness of the "level-off emissions" approach. I appreciate Kevin's summary of what a necessary deep reduction of emissions would look like in the real world as an accurate description of feasible objectives for effectively responding to the significant climate change challenge confronting us. Of course, these are not over-night projects nor are these goals ones that can be accomplished without seriously questioning the nature of well-established, obstructive power in energy and geopolitical governance.
Week #4 Activity - Climate Change Policy Decisions in Your Country

SAMPLE RESPONSES FROM students RECEIVING NO CREDIT

When exploring the mitigation and adaptation policies, I am happy to say I found several instances of action in mitigation and adaptation, in my vast and too-populous country. I have chosen to elaborate on an action that would figure under "Explore ecosystems and water management", (I guess).

Chennai is the coastal capital city of the state of Tamil Nadu in southern part of India. Like many other metropolitan cities in India, potable water for the ever-growing urban population travels 100's of km to reach thirsty city residents. In 1999-2000, the city faced severe drought. Acute shortage of water prompted action, and the local government enacted a law in 2002 mandating every rooftop in the city to harvest rainwater.

All buildings and houses got a year's time from October 2002 to implement RWH (Rain Water Harvesting). The effort involved and the pace at which the law became real is an example of what political will can achieve. Transforming that will into actual implementation was due mostly to the efforts of Shantha Sheela Nair, then Secretary, Water Supply and Municipal Administration, and popularly called the ‘water woman’. Awareness increased, but a good number of residents took action more because of the immediate need to comply with the law. The entire process has been serving to sensitize people to develop a wholesome sense of ecological consciousnesses.

In 2005, the city received a record annual rainfall of 250 cm. Surveys showed that the water table had gone up by 20 feet, a phenomenal increase! Most remarkable was the filling up of the temple tanks, (which had become playing fields).

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For the writing assignment this week I chose to research Pennsylvania's landfill gas recovery program:

Under Governor Ed Rendell, who served from 2003 to 2011, Pennsylvania DEP developed and supported an aggressive project of reclaiming methane gas from landfills and using it to provide energy to local businesses. In 2006 Pennsylvania won a national award for putting landfill gas to use to benefit the economy. LFG recovery reduces methane emissions, reduces reliance on non-renewable energy sources, and offsets emissions of a number of pollutants and greenhouse gases. Locally, the Lanchester project was the first in the state to deliver landfill gas to multiple users, including Dart Container and New Holland Concrete, both within a ten mile radius of where I live.
Policy was developed by the PA DEP to streamline permitting so that delivery pipelines could make use of existing highway and railway rights of way. Through the Pennsylvania Harvest Grant Program and the Pennsylvania Energy Development Authority, more than $1.5 million was invested in landfill gas projects. Alternative Fuels Incentive Grants provided another $1.3 million for R&D on landfill gas as a transportation fuel. By 2011 forty such projects had been established. Construction provided jobs and completion assured a reliable energy source to keep manufacturing in place.

With the inauguration of Tea-Party Republican Tom Corbett as Governor in January 2011, the program seems to have come nearly to a halt. The DEP website listing of completed projects has not been updated since July 2011. The only announcement that I could find of completion of a plant since that date is the dedication in July 2012 of a cogeneration plant in Somerset County that was begun before 2008. It appears that the benefits of landfill gas recovery have been cast aside in favor of cheap natural gas due to the fracking boom.

Carbon emissions mitigation in Washington State, USA is a topic that is supported in general by the urban population, but less supported by rural communities. Those communities in the central areas of the state depend largely on our logging industry. Washington State government has worked hard at trying to address the issue of deforestation impacts on the climate while trying to retain the livings of those who depend on logging. Here we have the Forest Carbon Workgroup that informs the state government on ways to mitigate CO2 emissions. The workgroup includes NGO’s, government officials and industry representatives. Below is a link to the most recent report by this group. On this post I want to share one of the most visible outcomes of this group over the years. Clear cutting of our forests used to leave scars all over the mountain sides. Today however the scars are much fewer, not because of a reduction in forestry but because of active regrowth of the forests. Small tracts are clear cut but then the forestry companies proceed to replant immediately. They mark the areas along the roads through Washington advertising when they replanted and when those trees will be harvested again. It has proven to be a very good tool for them to gather positive consumer response and people actively looking to use products from those forestry companies that they see participating in attempting to engage in sustainable forestry.

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For the Required Assignment for Week 4, I chose Solar Power in India.

India is a non-Annex 1 country under the Kyoto protocol and thus has no binding targets, but has come up with a National Action Plan on Climate Change, described here: [http://www.globeinternational.org/images/climate-study/India.pdf](http://www.globeinternational.org/images/climate-study/India.pdf) which was adopted in 2008 and has eight national missions running up to 2017. One of these is the National Solar Mission.

About 5000 trillion kWh of solar energy falls on India every year, with most parts receiving 4-7 kWh of energy per square meter per day. Thus there is a huge potential for India to benefit from solar energy, and the National Solar
Mission aims to have India become a world leader in solar energy. The first (5 MW) solar power plant was initiated in the southern state of Tamil Nadu in 2011. The plan is to eventually have a 4000 MW solar power plant (world’s largest) running in Rajasthan. The National Solar Mission is under the Ministry of New and Renewable Energy and was launched in January 2010. Its aim is to have 20,000 MW of grid-connected solar power by 2020, and 1000 MW of off-grid power to rural communities by 2017. Most of India’s photovoltaics are imported from abroad; so the idea is to ultimately come up with low-cost alternatives that can be manufactured at home.

Some of the implementation tools include a mandatory Renewable Purchase Obligation (RPO) for power utilities, customs and excise concessions on key materials, introduction of mechanisms to certify and rate manufacturers of solar devices and technologies, use of ongoing remote village electrification programmes to distribute solar lighting systems, mandatory solar heating in buildings. A Solar Research Council has been set up to oversee research and development, and collaboration has started with key engineering colleges like the IITs to promote specialized courses on solar energy.

The National Solar Mission description here (http://www.mnre.gov.in/file-manager/UserFiles/mission_document_JNNSM.pdf) does not include details of how effectiveness will be measured. However it does mention that a Solar Energy Authority within the MNRE, a Mission Steering Group and Mission Executive Committee will oversee and review the Mission at regular intervals.

An investigation by the National Council of Applied Economic Research determined that despite limited functionality of the luminaires and the decrease in performance over time, the off-grid remote village solar lighting program had some beneficial effects: improvement in children’s education, more time for income-generating activities, better standard of living and lower crime rates. Impact of Solar Energy in Rural Development in India by Tarujyoti Buragohain: http://www.ijesd.org/papers/242-B10021.pdf.

What are the challenges? As mentioned earlier, developing low cost materials to be manufactured within the country would be crucial to the aim of solar energy independence and world leadership. This requires a major investment in R&D. Currently much of the key material is imported and is subject to higher costs whenever the rupee drops in value. Also, off-grid solar power distribution to village India will be challenging. The continued commitment to coal will, without more public awareness and pressure, lower the incentive for a solar and wind-powered India. Corruption is always an ongoing concern.

In terms of economic impact, here is an update: A report by the World Bank in December 2013 reports that India’s installed solar capacity has already jumped from 30 MW to over 2000 MW. According to the report as quoted in the International Business Times, India is on the verge of becoming a global power in solar energy. http://www.ibtimes.com/here-comes-sun-india-verge-becoming-
global-solar-power-1506826. It appears that the economic potential in the growing demand for solar power is likely to be huge.

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I live in the Blue Mountains 80 km west of Sydney, an area world heritage listed in 2000 and famous for its pioneering history in early Australian settlement. Amidst its vast natural treasures is the Wollemi Pine, a plant that dates back to the Jurassic period. The Blue Mountains population (40,000+) comprises a commuter workforce to the Sydney Basin area and an aging population, but international tourism is the core of the local economy with over one million visitors a year. Protection of the environment ranks as the leading concern with the local population. The mountains are exposed to fire risk and climate change research by Australia’s principal scientific research body (CSIRO) released in 2008 projected rising temperatures with more intense fires: 1.1 - 1.90 C by 2050. This research predicts an overall increase in rainfall but wet days decreasing by up to 4 – 6.5 days per annum over the same period. In October 2013 bushfires destroyed about 250 homes in the area following which tourism dropped off drastically and is still struggling.

In 2008 and 2009 two comprehensive studies looked at the impact of climate change and adaptation and mitigation measures. The Impacts of Climate Change on Australian Tourism Destinations by the Sustainable Tourism Cooperative Research Centre identified 17 mitigation strategies such as solar heating, energy efficient lighting and grey water systems. Workshops were scheduled for further evaluation and action, and to prioritise the strategies in line with projected climate conditions in 2020, 2050 and 2070. Increased public education was recommended as urgent as was the need for integrated management planning and to consult businesses and keep them onside. A comprehensive study was commissioned by the Blue Mountains Council and undertaken by Climate Risk (http://www.climaterisk.com.au/) The Blue Mountains Climate Change Risk Assessment Report (92 pages) identified 102 risks due to climate change in categories of extreme, high, medium and low risk with extreme risks mainly associated with bushfire, biodiversity and impacts on tourism. A risk assessment process was proposed and workshops were tasked with identifying the probability and likelihood of certain primary, secondary and tertiary climate change hazards.

This risk assessment study was partly funded by the Department of Climate Change and Energy Efficiency and is available online from the Council website. Unfortunately this Department was abolished by the new conservative government with its role subsumed (or downgraded) by another department. This incoming government also abolished the Climate Change Commission and aims to abolish the carbon tax introduced in 2012 replacing it with what they call a direction action plan that pays polluters to reduce their emissions. Most economists are sceptical about efficacy of this approach. Suffice it is to say that at a local level climate change and its impacts are taken much more seriously than at the national level. It’s like the difference between Fox News and The Guardian.
SAMPLE RESPONSES FROM students RECEIVING CREDIT

Step 1: Select an example relevant to your community, region, or country from this table.

Disaster risk reduction.

Sri Lanka, an island located in tropics surrounded by the Indian Ocean is vulnerable to low frequency and impact natural disasters (Tsunami, droughts, floods and cyclones) as well as high frequency low impact disasters such as landslides and storms.

Until the Indian Ocean Tsunami of 2004, very limited policy initiatives had been taken to enhance the nation’s preparedness for disasters.

2004 IOT was a shock and a crude awakening to nation.

Step 2: Research and find a local policy.

In the aftermath of IOT of 04, the Government of Sri Lanka prepared the first significant policy document titled “Towards a Safer Sri Lanka: A Road Map for Disaster Risk Management “ with the technical assistance from UNDP. The recommendations of the Parliament Select Committee (PSC) on Natural Disasters (2005) which was convened immediately after and the Disaster Management Act No 13 of 2005 (DM Act) provided the basis for the current disaster management approach. The PSC Report and the DM Act require the formulation of a national disaster management policy.

In February 2013 the government of Sri Lanka formulated and published “National Policy on Disaster Management: with an objective of achieving sustainable and resilient disaster management through -

1. Appropriate institutional, legal and implementation mechanisms;
2. Informed, scientific, multi-hazard risk reduction approaches mainstreamed in development and reconstruction based on national priorities.
3. Participatory, multi-agency, multi-stakeholder engagement in line with national and international standards for effective disaster relief and response

Step 3: Now that you have studied the policy, use these questions to analyze it:

• How will the policy support the effort?

The three documents mentioned above form the pillars of the nation’s disaster management policy- in which disaster risk reduction is a significant integral part. The policy has enabled the development appropriate institutional and legal frame work and also to bring the stakeholders together to facilitate coordinated efforts in DRR.
• What are the tools used to implement the policy? (Consider examples such as taxes, subsidies, performance standards, and others.)

There are multiple tools deployed in implementing the policy including economic incentives and disincentives, penalties for acts such as violation of building codes, government grants for relocation of people from highly vulnerable areas and facilitating risk transfer mechanisms.

• How is the policy’s effectiveness measured?

The implementation of the policy is measured by examining the progress of key activities.

• What are the key constraints for implementing the policy?

Budgets, lack of safety consciousness among the population, insufficient efforts to complete risk profiling.

• How does the policy affect the economy?

The policy, if well implemented, has a potential to avert the potential economic loss due to natural disaster.

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Small rural parts of Canada have limited resources and limited power to do anything. There are insufficient resources to address coastal problems. There was a Coastal Areas Protection Policy released, but the policy was not adopted through legislation or regulation. It just sets out a guideline for the local governments to take into consideration.

There is a Community Planning Act that has provisions for municipalities and rural communities to enact a flood risk area bylaw, with approval. But some of the flood risk maps are out of date where I live. Some of them have not been updated since 1962.

The majority of the municipalities do not believe that climate change is a threat. Therefore, if they do not perceive a threat they will not be bothered about adaptation.

Municipality awareness about climate change is imperative to be able to move forward. Education is crucial in improving awareness. If the stakeholders can understand how climate change can personally impact them, they will be more likely to do something about it.

Workshops have since been held, around the Province to help raise awareness and educate about climate change.
More barriers have been built up against the waters edge, and people do seem to be more aware now, so the workshops were a good idea.

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No matter how small it may be, one have to applaud, whenever a step is taken in the right direction.

Yesterday a majority of Danish political parties agreed to present the Parliament in very near future for a proposal for a climate bill. No doubt it will be adopted.

The main objectives of the bill will be
1) to secure a 40 % reduction of GHG emissions in 2020 compared to preindustrial level
2) to work for a fossil free society by 2050
3) to set up instantly an independent academically based climate council
4) to present to the Parliament annual climate political reports
5) to initiate a process, where the minister for climate every 5 year will be required to present to the Parliament climate objectives for the next 10 years and
6) to allocate via the annual financial bill a fix amount of money to finance both the climate council as well as new activities in the ministry of climate.

More information can be found here:

PS. We have recently change government, as one of the three- party Government parties decided to leave the Government last week. Therefore the name of the minister of climate has changed.
Week #5 Activity - “Six Americas” Climate Change Survey SAMPLE RESPONSES

SAMPLE RESPONSES FROM students RECEIVING NO CREDIT

One belongs to the concerned group while the other belongs to the cautious group

I belong to the alarmed group, therefore my views differ from theirs. People in the alarmed group are convinced that climate change is happening, that humans are the main cause, and that it is a very serious threat. On the other hand, people in the concerned group are convinced that global warming is happening, that humans are the main cause, but are somewhat worried about global warming and consider it somewhat to very important issue to them personally; while people in the cautious group believe that global warming is happening, but are not entirely sure, with the majority saying they could easily change their mind. Also, about half believe humans are the main cause, while half believe it is the result of natural changes in the environment.

Climate scientists should communicate with the general public in a manner that is easily understood, even to a layman or the farmer who has never been to school. A farmer understands certain things about weather and its impacts on crop yield. Therefore, the language should be as plain as possible.

This activity has made me understand that there are still people out there who do not believe that the climate is changing, even though there are a lot of weather events to show. Therefore, there is the need for climate scientists to reach out more to the public, and create better awareness on the need to change our lifestyles and reduce carbon emissions.

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I surveyed 10 of my friends and only 6 responded. Of the 6 who responded, I had 3 who were ‘concerned’, 2 who were ‘cautious’, and 1 who was ‘disengaged’. None of my responders were ‘alarmed’. The results seemed to be similar to what other participants were getting with their responders. Not too many people seem to be getting the ‘alarmed’ category and there appears to be a lot of ‘concerned’ participants. I think climate scientist need to go more public with their findings and be more persistent with trying to put their information out there to the “common folk”. I know they publish their work and they probably think that is as public as it gets, but unfortunately, they need to go beyond that in order to reach the smaller subsets of the population. People like the friends I surveyed aren’t going to go and download the scientific papers to learn more about climate change, and they aren’t going to take classes like this to become more self-aware.

---https://www.facebook.com/donna.graham.lady

I took the survey and was Concerned. My son was also Concerned. I noticed that class participants tended to be Alarmed or Concerned, which makes sense because we are seeking out more information about the problem (i.e. taking the class). My sister and granddaughter were Cautious. I was quite surprised that a 13 year old girl, who is not into science at all, was paying enough attention to come out Cautious.

How should climate scientists communicate with the general public? They need to talk about a topic that means a lot to the audience and describe how it will be negatively impacted by climate
change. For instance, when I watched the NOAA Ocean Acidification Demonstration that was included in the optional activities for lesson 10, my attention was captured. She spoke about how the ocean is becoming more acidic due to the increased absorption of CO2. She called it osteoporosis of the sea. That is a good medical metaphor. But more powerful than that, is to talk about something people really love and how it is threatened by climate change. After the NOAA video explained how shellfish would be corroded by the extra acid in the sea, and then uttered words like oysters, clams, crabs, and lobsters (and I am guessing shrimp, too), I was like, Wow, the people of Maryland (and many other places, too) need to know this! We love seafood. It is jobs, tourism, and daily food! I wonder how many people realize that a food that they love may become damaged (or extinct?) due to the climate change problem?

In conclusion, I am going to work on trying to tell other people what things in their everyday life (or especially in their children’s and grandchildren’s life) could be changed or threatened by climate change. Another idea I got from taking the survey was to punish companies that are opposing steps to reduce global warming by NOT buying their products. I am going to start getting involved in doing that.

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What are the results of the survey for your friends?

I shared the link via my FB-page and due to the fact that I mostly use Facebook for climate change related activities and information sharing, the replies I received are obviously not representative! A few folks fell into the “concerned” category but the majority are "alarmed" (or even "alarmed!!!"). My own result also is "alarmed" although I mention in my profile on Skeptical Science that I’m concerned about climate change. But, the more I learn about it, the more alarmed I get - especially at the stalled process to actually do something about it.

How do you think climate scientists should communicate with the general public?

Scientists should clearly and directly communicate with the general public and get rid of as much technical lingo as possible without watering down the information too much as this invites nitpicking from the dismissives by harping about semantics.

What are your conclusions from this activity?

People who are concerned and/or alarmed about climate change should make their concerns known to their friends and families as they are hopefully seen as trusted messengers. This should help "spread the word".

SAMPLE RESPONSES FROM students RECEIVING CREDIT

What are the results of the survey for your friends?

I asked 22 persons among family members and friends. I send a second mail to all in order to assists those having problems starting the survey. And finally I send a third mail including the article of Somerville and Hassol / “Communicating the science of climate change” to all saying thank you to those, who had responded and giving the other half a deadline to respond, if they so wish.
I received all together 11 responses. Not much but still 50 %. 4 persons (36 %) were alarmed, 6 persons (54 %) were concerned and one person (9 %) was cautious. Basically you can’t take about percentage, when the survey only covers this small number of respondents.

Knowing friends and family members I am of course not very much surprised of the result. Only two persons surprised me. I had expected them to be a bit more disengaged or even doubtful, based upon previous discussions, but interestingly enough there answers were respectively “concerned” and “cautious”.

I suppose the latest winter storm which came from the north and consequently pressed a lot of water into the Baltic Sea and consequently also into the Danish firth, flooding several urban and holiday areas, has given reasons for reflections. Sometime you learn more from catastrophes than from readings.

*How do your survey results compare to the results from other participants?*

The results of mine survey is quite similar to the one carried out by Frederick P. Blau (uploaded two days ago). The amount of respondents and the percentile distribution in the first three categories is quit the same.

*How do you think climate scientists should communicate with the general public?*

I too find the article of Richard C. J. Somerville and Susan Joy Hassol to be on the right track. It is very important that the professional and scientific jargon is translated into a more colloquial and basically understandable language for the majority.

It is necessary to speak in plain language but equally important is it to give people an impression of the possibilities for continuing life, maybe not in the same way as previously but anyway either not in a way of the stone age. It is possible I believe to change life style, to make use of the experience of the past and combining it with present technologies in such a way that the CO2 emissions can be reduced significantly.

As I referred to above we have just experienced actually two major winter storms and the amount of fallen trees in our forests is very high. In some areas it corresponds to the amount which is cut down during a whole year. These episodes together with e.g. flooding are increasingly making people more and more aware that something is not exactly the way it should be and therefore is it necessary to be there, the explain what is going on and what to do.

*What are your conclusions from this activity?*

My conclusion from this activity is that it could be interesting to test a much larger number of people. As mention above, I can see that at least to persons close to me have change positions since I discussed this issue with them last.

So more information to the public on risks and prospects is necessary and information should be in plain language, which at the same time should show possible different path for developing present societies into low carbon societies.
SAMPLE RESPONSES FROM students RECEIVING NO CREDIT

Who won the Nobel Peace Prize in 2007?

The IPCC and Al Gore won the Nobel Peace Prize in 2007.

What is the IPCC's role in the climate change discourse?

The IPCC assesses the scientific literature and summarises the results every 5 to 7 years when assessment reports are published from different working groups.

What has changed between the IPCC AR4 and AR5 reports?

AR5 is even more certain that current climate change is caused primarily by human activities than AR4 was. The Skeptical Science post "Why is the IPCC AR5 so much more confident in human-caused global warming?" summarises this as follows: "The fifth Intergovernmental Panel on Climate Change (IPCC) report states with 95 percent confidence that humans are the main cause of the current global warming. Many media outlets have reported that this is an increase from the 90 percent certainty in the fourth IPCC report, but actually the change is much more significant than that. In fact, if you look closely, the IPCC says that humans have most likely caused all of the global warming over the past 60 years."

Something else which was different between AR4 and AR5 has to do with what happened before the WG1 report of AR5 was published end of September 2013. John Mason explained this in the SkS-post Understanding the pre-IPCC Anti-Climate Science Misinformation Blitz. As far as I know there wasn't a comparable onslaught before AR4 came out.

We also have a handy reference on SkS about the most popular IPCC-myths: a collection of debunkings of the most popular myths about the IPCC.

In your view, what are the strengths and limitations of its mandate and processes?

The IPCC reports provide a regular summary of the state of climate change science and due to this are one of the most authoritative and complete scientific assessments created. There are two basic shortcomings: first of all, the time between the reports is too long and once a report is published at least some of its content may already have been superceded by newer research. And second, due to the process to sign-off the report's content by politicians from almost all countries, the summary statement tends to get "watered down" to the smallest common denominator - thus often "erring on the side of least drama".

What did you find out about how climate change will affect your region in the IPCC reports?

Frankly, I didn't check out the IPCC report for this, but there is a new website which shows the
various impacts of climate change for Germany: http://www.climateimpactsonline.com/. The website is a cooperative project of Potsdam-Institute for Climate Impact Research (PIK) and the company WetterOnline Meteorologische Dienstleistungen GmbH as a part of the CIES (Climate Impact Expert System) project. The impacts can be displayed for all of Germany or narrowed down by region and a wide variety of impacts can be explored. For UoM's Climate Change course I put together a writing assignment last year about this new portal which was still under construction at the time of the writing: Climate Change Assessment for southern Germany.

The 2007 Nobel Peace prize was awarded to the Intergovernmental Panel on Climate Change and Al Gore, Jr. The role of the IPCC is to assess causes and effects of climate change. The main difference between the Third Assessment Report and the Fourth Assessment Report on Climate Change is the conclusion that global warming in unequivocal. It appears to me that the IPCC is saying in the Fourth Assessment Report that global warming is a fact no longer a likely outcome based on scientific projections.

The strengths and weaknesses of the IPCC’s mandate and processes are as follows:

**Strengths:** It can gather together the top scientists from around the world and study climate change in depth and hopefully in an unbiased manner.

**Weaknesses:** It cannot dictate or enforce solutions—it can only suggest a rational path of action based on scientific research.

North America will be severely affected by global climate change: wildfires; coastal flooding; habitat migration northward; heat waves; increased disease in plants, animals, and humans; extreme weather events; water quality degradation; etc. Global climate change will cause a massive adaptation to have to occur.

**SAMPLE RESPONSES FROM students RECEIVING CREDIT**

The Intergovernmental Panel on Climate Change (IPCC) is an organization that was established by the United Nations Environment Programme (UNEP) and the World Meteorological Organization (WMO), and is housed in the WMO headquarters in Geneva. The IPCC won the Nobel Peace Prize in 2007, along with Al Gore, for their work in communicating the severity of climate change to the public.

The goal of IPCC is to review, assess and report on climate data. It is not their job to conduct experiments or build models, rather to collect information and share it in a coherent way that explains the scientific consensus. The IPCC reports have been tremendous feats of international cooperation, as there have been (in the case of AR5) over 200 lead authors and 600 contributing authors from 32 countries and over 9,200 scientific publications cited.

The AR5 was released in late 2013 and will be considered by Working Group II in March and Working Group III in April, with the synthesis report due in October 2014 in Copenhagen. The Fifth Annual Report (AR5) builds on the findings of the previous reports and includes updated findings, including more specific information about global warming contributions of individual greenhouse gases. Also, the AR5 includes an atlas of regional projections of climate change for local and regional decision makers.
The AR5 includes most of the information from the AR4, however, many predictions have been upgraded. The AR5 had upgraded guidance notes with clarifying language regarding levels of confidence. In this most recent report, the IPCC has changed its level of confidence in anthropogenic global warming from “very likely” to “extremely likely”. In addition, it includes more dire predictions for estimates of sea level rise and the melting of summer sea ice in the arctic.

In my opinion, the IPCC is just what the world needs in order to start mitigating its CO2 emissions and adapting to climate change. The IPCC serves as a central clearinghouse for information and consensus from scientists around the world. However, the limitations of the IPCC reports is that they are not very readable by the general public and hard to interpret by policy makers. I believe that it is up to the rest of us - the “semi lay people” – the activists, business owners, teachers and concerned citizens to communicate the findings of the IPCC in common language to whatever audiences we have access to.

Regional projections show drastic changes for Michigan and the rest of the Midwest in the next 100 years. We can expect the climate to warm at a rate of +1.5° for each degree of warming that the globe experiences, totaling a possible 7° by 2100, and a 10 to 20% increase in precipitation.

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This is my week 6 Reflective writing, and I also attached the link to the IPCC 5th Assessment Report, Technical Summary, of the Working Group 1, for reference.

Al Gore and the IPCC won the Nobel Peace Prize in 2007.

The role of the IPCC in the climate change discourse is to present their assessment of existing studies. The IPCC is a scientific body under the auspices of the United Nations (UN). It reviews and assesses the most recent scientific, technical and socio-economic information produced worldwide relevant to the understanding of climate change. It does not conduct any research nor does it monitor climate related data or parameters.

The changes between the IPCC AR4 and AR5 reports. The AR5 report considers new evidence of climate change based on many independent scientific analyses from observations of the climate system, paleoclimate archives, theoretical studies of climate processes and simulations using climate models. It builds upon the Working Group I contribution to the IPCC’s Fourth Assessment Report (AR4), and incorporates subsequent new findings of research. As a component of the fifth assessment cycle, the IPCC Special Report on Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation (SREX) is an important basis for information on changing weather and climate extremes.

How climate change will affect my country, the Philippines, according to the IPCC reports – based on what has happened in the Philippines, specifically the typhoon Haiyan which caused severe damage to lives and properties, the country is very much vulnerable. Looking at the maps, the Philippines is shown to have increased temperature by 1 deg. C to 1.25 deg. C during the period 1902 to 2012. The Philippines, as shown in the map of the report, has increased precipitation between 10 to 25 mm/year per decade (1901 to 2010). In terms of ocean acidification, the worldwide trend will most likely be felt in the Philippines as: “The atmospheric concentrations of carbon dioxide, methane, and nitrous oxide have increased to levels unprecedented in at least the last 800,000 years. Carbon dioxide concentrations have increased by 40% since pre-industrial times, primarily from fossil fuel emissions and secondarily from net
land use change emissions. The ocean has absorbed about 30% of the emitted anthropogenic carbon dioxide, causing ocean acidification."

Week #7 Activity – A Trusted Communicator SAMPLE RESPONSES

SAMPLE RESPONSES FROM students RECEIVING NO CREDIT

A trusted communicator would have been no other person than Late Prof. Adefolalu. He was a professor of meteorology and climatology, but passed on two weeks ago. He was my undergraduate supervisor, and an authority in the field of climate science in my country, Nigeria. In view of the above, I would consider myself as a trusted communicator. What is the essence of learning, without putting it into practical use? I did my undergraduate thesis on the effect of climate change in my country, and have worked in the Climate Change Center in my country as well. With such a background, and a major in Geography and GIS, I am qualified to talk to diverse group of people, be they students, business people, senior citizens, policy makers, etc. In this case, since I am the trusted person, I will equip myself with basic knowledge of how to effectively communicate with people of diverse backgrounds. Having in mind that these people have different ideologies and beliefs, I will make effort to communicate in a simple and plain language.

• To the students, I may consider backing up my communication with statistical data;
• To the business man, I may consider using the fossil fuel burning analogy to make him understand why he should be energy efficient as well as go green;
• To the senior citizens, I may consider the option of educating them on old habits that die hard, which may be contributing to global warming such as bush burning, using fertilizes on farms, felling trees for wood (as these are common among senior people with low income); and
• To the policy makers, the need to regulate use of fossil fuels, implement and enforce climate change laws.

Strength is that I have a broad understanding of the subject of climate science, and can debunk false claims with scientific evidences. Weakness is that I am not yet known nationally, so it may require some level of conviction on my part for people to believe.

5. The IPCC report indicates that climate change will affect my region (Africa) as follows:
• There will be a direct effect on crop yields through elevated CO2 levels, variations in temperature, increases in crop pests, etc.
• There will be indirect environmental feedbacks through responses such as use of marginal lands increasing degradation and influencing micro and macro climates.
• There will be a direct effect on agricultural zones affecting incomes and jobs;
• There will be a direct effect on human health and susceptibility to diseases such as HIV/AIDS and malaria;
• It will cause indirect alterations to socio-economic aspects of livelihoods, food systems and development processes through human responses e.g. land-use and adaptation responses. The report indicated that further analysis will be required although there is still much uncertainty in assessing the role of climate change in complex systems that are shaped by interacting multiple stressors; and concluded that climate change and variability, and associated increased disaster risks, will seriously hamper future development in Africa.

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Why is the person you describe a trusted communicator to discuss climate change issues in your community?
I think it will be not easy to find one person to propose as far as trusted communicator is concerned. As climate change is cross disciplinary and includes various sectors, it needs a group of experts and community peoples who can serve to communicate the climate change information. The group needs a well versed person who can coordinate the overall delivery of climate change information. On this background, I can play a role of training the local resource person (LRP). I have been academically fit and I have gained considerable experience on agriculture, NRM relayed fields. I bring over two decades of working with spectrum of organizations and projects helping communities to cope with livelihood, environmental and poverty reduction issues. During the last three year with my present positions, I have communicating with students, government staff and community members, climate change and its impact on Forestry and biodiversity, food security and agriculture, Public health, climate induced disasters, etc and helping to prepare adaptation plans at various levels- community and landscape levels.

What specific audience would this person best be suited to talk to?

With the enhanced knowledge and technical expertise, the trained local resource person from the community having least high school education, will in support communities to prepare and implement adaptation plans. He will also help the communities to monitor and reflect the adaptation activities, implemented in the field. With this, the communities will increase their resilience towards resilience.

What information would you give to this trusted person to make sure he or she is well informed and doesn’t circulate false information?

The local resource person needs to have skills to conduct community level training with technical inputs, I would suggest him:

- Be familiar with communities values and norms,
- Ability to convey complex climate terms and its impact in simpler languages.
- Have technical understanding on climate change, its impact and adaptation planning
- Allocates enough times for preparation for the training event and puts lot of efforts on delivery and post training monitoring.
- Brings lot of examples from community and involves different stakeholders on training and adaptation planning

Strengths and limitation:

Strengths:

- Comes from community and stays in the community for some time.
- Have enthusiasm in learning new things specially climate change issues
- Pays roles of change agent in social transformation of the society
- Is easily received by community

Limitation:

- He may not be commanding as the elders may thing he does not know much on climate change
- Always looking for better opportunity and so may not be available always.
Will have difficulty in understanding climate change concepts

Climate change in South Asia:

- Seven countries, 1.6 b in 2010 pop to rise 2.2 b by 2050
- Sea level projected to rise by 100 cm by 2050
- Monsoon rainfall to become more variable with greater frequency of devastating floods and droughts.
- Glacier melting and snow cover loss could be severe.
- Unusual extreme events in the summer months are projected to affect 70% land area.

(Source: WB 2012. Turn down the heat why a 4 C world must be avoided)

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A trusted communicator about climate change in my community would have to be a scientist whose field is the study of climate science. I live in a suburb of Washington, DC and I think that the students, business people and senior citizens of this area are for the most part highly educated and would only believe a scientist. The best audience for the scientist to talk to would be a university of high school science class or a senior citizen group. I think that a business group would be a hard sell since there are so many lobbyists in this area that they would turn a blind eye towards reason and the actual science in favor of the business interests.

If I was asking a non-scientist to address a group on climate change, I would give the person the results of IPCC R4 and ask him or her to deliver the assessment report highlights and emphasize the fact that there is a consensus among scientists about the effects of greenhouse gases on the Earth’s climate system and the time for action is now and the time for debate is over.

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To perform the required activity this week I had to decide which it was more important knowledge of climate change or achieve reliable communication. I opted for the latter option since I know neither reliable communicators nor climate change experts in my community (Seville, Spain) and in my home country (Equatorial Guinea). At first I thought of politicians, journalists and celebrities, but they are not adapted to the idea that I have completely reliable communicator or they are not from my community. Finally I opted for choosing Anastasia Nzang Nzé Ada, economist, expert in gender, Human Rights and Local Development, Feminist, Defender of the Rights of Women and Pan Africanist. She is a person of good reputation both in Equatorial Guinea where she is an expert for the Ministry of Social Affairs and promotion of women, as in Spain where she has worked as assistant for the Andalusian Parliament and was awarded the prize for the Woman of the Year of the city of Seville, for their personal and social biography. Former president of the association Afromujer Andalucía and current president of the NGO Equality and Rights in Africa. Well, she’s my mother also.

1-Why is the person you describe a trusted communicator to discuss climate change issues in your community?

I chose Mrs. Nzé for his communication skills and his long career international cooperation (Panama, Senegal, Burkina Faso, Guinea-Bissau, and Equatorial Guinea). Her degree is an economist and she is not an expert on climate change, but in their efforts to empower women
always emphasizes the primary role of rural women in the fight against climate change in developing countries, highly vulnerable.

2-What specific audience would this person best be suited to talk to?

Mrs. Nzé has worked in local development and she is used to speak to rural groups, women, youth and illiterate children, but she has also run seminars and talks to politicians and authorities. I think I could adapt to any audience.

3-What information would you give to this trusted person to make sure he or she is well informed and doesn’t circulate false information?

She knows the existence and effects of climate change directly acquired rural populations with whom they have worked, which notice changes in their environment without scientific evidence (rainfall patterns, temperature variations, incidence of pests and diseases). Yet the information I would give her would be global and basic data to support his talks.

The reason for my choice is that she is one of the most reliable people I know and one of the best communicators for all audiences from parliamentarians to illiterate people.

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I am taking this assignment personally because this is the essence of why I registered for this course – I believe the public and my hoped for future university employer will expect me to speak well and knowledgeably about climate change and other environmental concerns. I am a doctoral student in ecology. I study ant population and community ecology and am particularly interested in the possibility of using ant species as bioindicators for ecosystem health and climate change. There is some evidence that ants species may be useful for this. I have already developed a reputation locally as an interesting and trusted speaker. I have worked with middle school and high school students as well as adults in various events and presentations on entomology, ecology, and natural history focusing on local species, areas, and concerns. I have also given lectures as a guest at other universities. I am adept at engaging my audiences, encouraging their questions, thoughts, and their own answers. I am enthusiastic and enjoy my subject and my audiences. I believe I am trusted because I am working on this degree but speak easily to non-professionals. I obviously want them to understand and enjoy the world around them. I also balance what I say well – with what I know and don’t know, I take correction or challenges well, and affirm the knowledge and thoughtfulness of the audience. I ask them questions and I expect answers or at least thoughts. I am taking this course to get my own knowledge and resources about climate change updated. I am also making better connections between the ecology I have studied and am doing with what this course is offering. This has been very helpful – I have a better idea of how to pitch this kind of presentation, what may be behind various concerns and skepticism, and how to approach questions about climate change should they arise in other presentations or settings.

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The Kyrgyz Republic

The Kyrgyz Republic is a small Central Asian country located bewteen Himalayan mountains and valleys of Kazakhstan and deserts of Uzbekistan. Highland glaciers on the territory are the main source of water and rivers flowing to the neighbouring Central Asian countries (Kazakhstan, Uzbekistan, and further to Turkmenistan and Afghanistan). And local scientists have made a robust research on the impact Climate change to the glaciers, melting down of which could led to less water and consequent resource based transbounder conflicts. Taking into account the
hotspots of conflict in Central Asia water resources and Climate Change are to be the key reason for conflicts’ escalation.

But Climate change became an urgent theme for locals just recently (5 years ago). Mostly it was initiated by the UN Convention on Climate Change (1992) and establishment of Kyrgyz National Climate Change Center (2005) that started the work on compiling existing scientific research and quantifying Climate change impacts in different spheres of human life according the IPCC guidelines. And seems like an obstacle hampering the Climate change discussion in Kyrgyzstan was lack of information regarding the changes in temperature, precipitation, and the important data on explicit impact of Climate change on local communities and agriculture. Until such data was available the Climate Change was an abstract theory for the public audience.

Of course there were number of local scientists working on meteorological observations, studying climate change and making weather forecasts. And owing to the work of Kyrgyz Climate Change Center and support of Kyrgyz scientists the exact information on increased temperature and its impact to the glaciers, as well as data on energy sector contributing 46% of CO2 emissions, and about 30% of agricultural GHG emissions was available. Experts provided estimations that 1°C increase would lead to the loss of glaciers by 19% in average, and 2°C increase would lead to the loss of 50% (in average) of glaciers (http://www.ekols.net/wp/?p=5951). And such impact will have inevitable impact to the water flow rates, changes in precipitations, loss of biodiversity and broader ecosystem adjustments.

Such data of local scientists, active position of NGOs and UN agencies, and later the Government (which satarted the dialogue on Sustainable Development, initiating the official Development Strategy) moved forward the snowball of Climate Change discussions and implementation of specific measures to mitigate and adapt to Climate Change (introduction to energy efficient house insulation, to efficient boiler rooms, propagating renewable and recycled products etc.). So ultimately local prominent scientist in Meteorology, Ecology or Geography were the first communicators to launch these activities, that later involved NGOs, UN agencies and the Government. And it was efficient of scientists to address non-science audience, highlighting exact consequences and losses that "down to earth" people could face in case of climate change, and addressing officials highlighting exact consequences of Climate Change on the level transboundary resource based conflicts. And work of Climate Change Center (CCC) in the Kyrgyz Republic being guided by IPCC could ensure the credibility of the information provided by this institution.

However, the status of Climate Change issue in the Kyrgyz Republic is very urgent, the action stage has not yet started. Communities are waiting for exact Action Plans to be worked out by the Government by the end of 2014 in order to initiate broader scaled activities to mitigate and adapt to Climate Change. And here is the role of our prominent communicators to provide needed and reliable information to the decision-maker during the process of working out these Action Plans. As to IPCC data by 2050 the Central Asian territory will undergo temperature increases, that will lead to loss of glaciers, reduced water flows in rivers, lower agricultural production (that is highly dependent on glacier sourced rivers), more intense rains as a result of higher evaporation, and consequently to more mud flows, floods and land slides characteristic of the mountainous landscapes. And it is very promising that availability of such data and stirring activities of local scientists and NGOs will support the decisions of the Government helping to keep the flow of Climate Change negotiations on its course.
I am writing this with the thought that we need to tell people that climate change is everyone’s concern, not just the scientists’ concern, as climate change will affect everyone. Climate change has actually affected not just the poor but even the US, Australia, UK and other rich countries have suffered hurricane, droughts, floods, heat waves, forest fires, etc.

As an added activity for me, thanks to Facebook, I can convey this message to the communicators that I listed below.

Step 1: Describe a trusted communicator who speaks about climate change for a specific audience in your community. Think of someone who would be trusted to talk with diverse groups such as students, business people, or senior citizens.

My answer:
I think it should be a group of communicators, as follows:
1) The President of the Philippines, presently Pres. Noynoy Aquino. Reason for choosing: he was elected by the people, at least those who elected him should listen to him.
2) The Head of the Climate Change Commission – for the overall activities on climate change in the country
3) The Secretary of the Department of Energy – to present ways on how to reduce GHG emission from the Energy sector. Energy is the biggest source of GHG emission.
4) Atty. La Viña – an international lawyer and educator, climate change negotiator
5) Fr. Jet Villarin – one of the scientists in the IPCC. Educated on the science of climate change. As a priest and President of Ateneo, he has a huge following.
6) Dr. Ambeth Ocampo – historian. He can show in the historical context about the Philippine climate.
7) Heads of DENR, Transport, etc. – to show how their departments can promote GHG emission reduction.

It should be in the form of a 3-minute video, with the President saying 2 lines: such as “climate change is happening, and greenhouse gases (GHGs) from our activities are causing it. It is our obligation, each one of us to do our share, even in our own personal, small way, in order to prevent worse climate change…”

Then all the others will say a one-liner on how GHGs can be reduced, such as in transport (cleaner fuels, electric vehicle), or from the Energy (use of renewables, energy efficiency).

The government should advertise this in the following:
1. TV during commercial breaks during primetime, as in lunch noon time shows.
2. Movies – before the movie showing.
3. Schools
4. Barangay – barangay captains should be given a budget to show this to people. There can be a mandatory attendance (several time schedules to give flexibility), 3 – minute video, 1 hour Q&A. Serve snacks and maybe ask a sponsor for raffle prizes.

The language should be plain, no scientific jargons.

Audience: All Filipino people. Since the language is plain and simple English, it can be shown to all audiences as majority of Filipinos can understand plain and simple English. For showing in the provinces, subtitles of respective dialects can be added.

Step 2: Describe why he or she is or would be trusted.

The President, backed up by scientists, leaders and Secretaries of Department, will be trusted as he is backed up by scientists and decision-makers.

All the rest are well-respected and knowledgeable in their respective sectors.

Step 3: Describe what information you would give to this trusted person to make sure he or she is well informed and doesn’t circulate false information.

All the scientists and leaders listed above will give the President all the facts, so the President can give correct information.
Week #8 Activity - A Sustainable Future SAMPLE RESPONSES

SAMPLE RESPONSES FROM students RECEIVING NO CREDIT

I am particularly interested in the energy section. A year ago I sold my SUV (it was 19 years old) and replaced it with a new plug-in hybrid vehicle (PHEV). This car can operate either on gasoline (at about 36 miles per gallon) or on electricity (at about 2.75 miles per kilowatt-hour). About 2/3 of my miles have been "electric miles" so far. In the US there are 232.2 million cars and light trucks, with an average fuel efficiency of 20.7 miles per gallon and an average distance driven of 11,300 miles per year. So the average fuel consumption is 546 gallons per year. If each of these were a PHEV similar to mine, each would use only 105 gallons per year, so the total amount of gasoline saved would be 441 per car per year, or 6.7 million barrels/day (1 barrel = 42 gallons) of gasoline. The US has about 1/4 of the world's cars and light trucks. If the rest of the world's vehicles use only 50% as much fuel as those in US do (better fuel efficiency and shorter distances), I estimate that with full penetration of PHEVs in the entire world, the saved gasoline would be 16.7 million barrels/day, which is about 19% of all the world's oil consumption.

In my home I have replaced most of my incandescent light bulbs by compact fluorescent ones. Each one saves about 70 watts. If one compact fluorescent light bulb replaced an incandescent one for each person in the world, 70 watts/person adds up to 490 GW. And if each is used just 1 hour per day, the average power saved would be 20 GW. Assuming this power came from coal-burning power plants with an average capacity factor of 70%, the nominal power would be 29 GW. So 58 coal-burning power plants with a 500 MW nameplate rating could be eliminated.

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In order to live in a more sustainable way I have changed the activities in my daily life as follows:

§ I have replaced all of our incandescent light bulbs with compact fluorescent light bulbs
§ Installed low-flow shower head in our showers
§ Recycle all of our electronics to the county eWaste recycling program.
§ Recycle all trash and newspapers through the county trash program
§ Use drying racks to dry clothes
§ Use cold water to wash clothes as much as possible
§ Use re-usable water bottles rather than disposable water bottles.

All of these actions are not very instructive to the daily routine but pay big dividends in terms of reducing energy use and the reduction of pollutants in landfills.

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I had pledged to reduce my carbon footprint by improving my life styles to consume less meat, use and recycle waste, not buying over packaged food, and consuming home grown organic foods in the first week of this course. Following the carbon pledge, I started looking at my habits in my daily life and exploring what can be done differently so that I can reduce my carbon footprints.

Here are some of my initiatives, practiced in my daily life:
I grew up in a family where meat consumption was not so high partly because meat was not easily available even in cities too and also it was not considered very good food peace loving people. Later when our family could afford to buy more, food pattern changed and we started to consume more and more. Now I realize that, it did add number of health problems and now I have decided to observe twice a week as “zero meat day. Nepalese cook meals twice a day and do not keep food for reuse, rather they waste it and call that as “JHUTHO”. Now with refrigeration, we can keep leftover food and reuse it later in the dinner. Another change in my daily life is to grow vegetables in the small garden and/or pots together with flowers. This has helped to reduce my food expenditure and has given me a place to work with nature. I am continuing to commute by public bus for my daily office and have no plan to buy a car. I will also be turning lights off for 1 hour on earth day – March 31 every year. I have also stopped using plastic thin bags for shopping, which have polluted all the rivers and drainage in my city.

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For my daily commute to work, I'm already mostly relying on public transport which is easy to do where I live in Germany. The distance is too far for walking or biking so neither is an option but a car is definitely not needed (it takes me about 30 minutes from leaving my home to reach my desk - as long as the train is on time!). I could "tele-commute" but actually prefer working in the office as this makes it easier to interact with my colleagues and as my commute is fairly short and can be done via public transport it's not really all that necessary to pursue.

I'm not a vegetarian and it's also highly unlikely that I'll turn into one anytime soon but what I do is to consciously eat less meat. For example, I like Asian food and what I often do is to order one of my favorite meals but without the meat and I'm not missing anything as the vegetables and sauce are just as tasty on their own. The same works for pizza where it's pretty easy to substitute meat/sausages for something else.

Over the years, whenever I had to switch home appliances like refrigerator or washing machine I made sure to buy the most energy efficient model available. Likewise, we are switching our lighting to LEDs where possible and feasible and have many of our electronic devices hooked up to plug connectors which we switch on and off as needed. As mentioned in the CO2-footprint activity we'd like to get PV-modules installed to supplement our electricity needs but a) we don't own the house we have a flat in and b) the roof faces into the wrong direction for optimal yield so this may not be a feasible option. But, I'll keep investigating and until this hopefully becomes feasible we'll stick with the slightly more expensive renewable energy plan provided by our local energy provider.

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I am pretty sure that our habits are important part of the solving of the climate change problem. The things that I do and that are good for the environment are:

- I unplug computer and TV when I do not use them
- I do not use air-conditioning in summer
- I like walking and always when I am not in a hurry, I prefer walking than taking autobus or tram
- I do not use machine drying and prefer to wear clothes that do not need to be dry-cleaned

Things that I plan to do to be even greener:

- I will reduce the amount of meat I consume and I will stop buying bottled water.

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I have found this activity useful, as it has given me further ideas to have a lesser impact on the environment.

First of all, I did not know there existed "smart" power strips. I shall be on the lookout for these in the future.

I am aware I take too long showers. Installing the low-flow showerhead should help. Will also consider installing faucet aerators, although I am a bit more careful with water in the kitchen than in the bathroom.

Finally, making my own cleaning supplies was something I had heard about, but never really considered. Shall look it up.

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First I want to say that while I think it is important to individually consider how we can reduce our reliance on fossil fuels, I believe these individual efforts can foster a false sense of security and inspire almost meaningless action. That may sound harsh and is a slap in the face to the approach to ecology that has been widely preached this past generation. But the individual approach undermines the desperate need we have for large scale governmental and institutional change.

Better to spend effort lobbying our governments to develop meaningful plans for mitigation and adaptation. No doubt we all need to reduce and conserve because a day will come when we have no choice and we need to be in practice. But I believe we need to dispossess ourselves of the notion that "if we each do our part, we will make a big difference." That minimizes the grave problem we face.

Ways to go green
1. lobby your lawmakers to place a tax or fee on carbon and other greenhouse gases.
2. Go vegetarian or vegan on weekdays.
3. Carpool, walk, take the train instead of the plane (it is far more pleasant anyway)
4. Change your damn lightbulbs. It will save you lots of money too.
5. lobby your lawmakers build more nuclear power plants.

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Several of the ways that I see relevant in my house hold from the list provided on the 10 Ways to Go Green and Save Green website are:

1. Setting my thermostat down a couple of degrees in the winter time (I don't have air conditioning in the summer).
2. Switching my house over to CFLS. I am currently exploring the option of switching over all my lights overs to LEDs. They seem to be the way to go energy and longevity-wise, though the initial cost is certainly daunting....
3. Washing clothes in cold water as much as possible. We already do most of our washing in cold water, the actual laundry detergent they have now, appears to be as good as washing in warm water...especially in our front loader.
4. Borrow books from the library. I have four kids and an English teacher for a wife. We are all avid readers. This seems like both an easy and economic way for my family to move to a greener lifestyle.
5. Add one more meatless meal a week. Although my family is far from vegetarian, we enjoy having several vegetarian meals a week (falafel being high among my kids' favorites).
Most of the suggestions on the site seem common sense and many my family has already incorporated into our lifestyle.

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We have always tried to keep our "carbon footprint" low even before we knew the concept. Most of our light bulbs are CFLs; we do our laundry in cold water; we have a plot in a local community garden and grow organic vegetables; we have a rain barrel; we put in energy efficient windows in our 1908 home; my commute vehicle before I retired was a bicycle, weather permitting (and sometimes not), otherwise I used public transportation; we take the bus to go into town (Philadelphia); the city turns organic waste into compost that we can collect for free; we walk to local shops and restaurants; most of our clothing and most of our furniture was purchased in thrift stores; some of our furniture and household objects were trash picked; we have always been a one car family and we keep it running as long as possible. We're not in a position to go without a car at present but we might consider a hybrid when our car gives up the ghost. This said, there is always something else we can do: 1) avoid using the clothes dryer (gas) and use the clothesline. 2) try making our own cleaning supplies. 3) buy local as much as possible. 4) (bonus offer) we are going to have an energy audit of our home to see where we might increase efficiency.

SAMPLE RESPONSES FROM students RECEIVING CREDIT

· Nairobi, Kenya ·

Week 8 activity. I wrote on FB about things I do for going green some weeks ago, without knowing it would be 1 activity. For this week, here is the song that I'm teaching my kids, which captures perfectly the 10 going green tips in the article, but in a fun way

http://www.youtube.com/watch?v=8DJ45Yc3urg
Week #9 Activity – Geoengineering SAMPLE RESPONSES

SAMPLE RESPONSES FROM students RECEIVING NO CREDIT
For sure Dr. Victor is correct. Even if I want to do Geo-Engineering, how will it be administered? Sure governance is an issue. Who will decide what is done, how where and to what extent?

And what you are talking about is a massive experiment on the living planet itself. So my question is who will administer it? CERN? Some other scientific body?

So I kick off my experiment. It is chugging along. I monitor all of the vitals I know about and I am tracking above or below expectation. Minor corrections as needed? What corrections, who decides?

As Dr Victor points out, once I perturb the system and it starts to go off the rails and maybe I can understand why or maybe not, what then?

It is important to understand that there is a radically different frame of references in play here. Man tends to think in terms of a human life span, the earth has a much longer view.

If I kick off a process, what is the target timing for a noticeable effect? Days? Weeks? Months? Centuries? If you attempt to effect change at a rate faster than say centuries, it is likely that eventually it goes completely out of control putting the fate of the biosphere is doubt.

So again, from this point in human history it is necessary for mankind to learn and understand the point of view of the natural planet.

Before kicking off any geo eng program, it may be valuable to do an assessment of the track record of mankind over the past 300 years.

We are in this mess, not because of climate engineering effort, but because of an effort to electrify the planet. An objective assessment considering all of humanity would result in a barely passing grade, as the level of service across all of society varies radically. So we were trying to make electric power and we ended up changing the climate. So climate change is a unintended side effect or secondary effect aside from the primary objective.

Why do we think geo eng would be any different? The problem is - what will be the side effect?

There are a lot of possible doomsday scenarios and the likelihood of textbook positive outcomes is very remote.

The idea of human society playing god with the planet that sustains us, with our track record is very scary indeed. The universe of possible negative outcomes is almost limitless.

---

For Week 9 Required Activity I have Chosen the next article: http://www.realclimate.org/index.php/archives/2007/05/thin-soup-and-a-thin-story/. It is about using iron fertilizer in ocean as geoengineering. I think that geoengineering is a complicated issue. The climate system is too complex to try to
change it in order to remedy a problem and than many other more are generated. When, in addition, it is changing the food web of the aquatic system, it can trigger a series of completely unpredictable effects, modifying the hydrological cycle, chemical characteristics and ocean dynamics, biodiversity, etc.. Also we do not know for sure if that would be an effective solution.

I think it's best to try to act well in time and develop sustainably rather than change the world to suit us, thus never stop as we always create new problems to contend with.

---

Oh Boy. The feud is on.

Geoengineering

The material on Geoengineering does not appear to have had updates since 2009. I was interested in the following post A biased economic analysis of geoengineering.


The Analysis of this document was undertaken by Alan Robcock, Rutger University.

He is quite scathing in his report on the analysis undertaken by Bickel and Lee with respect to their treatment of the risks associated with geoengineering and Solar Radiation Management. He feels they deliberately under estimate the risks confronting the planet from geoengineering and that their cost benefit analysis is severely flawed. He is critical of their using non standard terms in their analysis such as the flux rather than w/m2. But I suppose his biggest question over the intent of this document which prospectively colours the analysis and benefit projections is contained in his first paragraph which I include here.

The “consensus” in the title of Lomborg’s center is based on a meeting of 50 economists last year. The problem with allowing economists to decide the proper response of society to global warming is that they base their analysis only on their own quantifications of the costs and benefits of different strategies. In this report, discussed below, they simply omit the costs of many of the potential negative aspects of producing a stratospheric cloud to block out sunlight or cloud brightening, and come to the conclusion that these strategies have a 25-5000 to 1 benefit/cost ratio. That the second author works for the American Enterprise Institute, a lobbying group that has been a leading global warming denier, is not surprising, except that now they are in favor of a solution to a problem they have claimed for years does not exist. - See more at:http://www.realclimate.org/index.php/archives/2009/08/a-biased-economic-analysis-of-geoengineering/#more-840

My thoughts. Hmmmmm. Unscientific, skeptical and needing more information. The full commentary covers the failure to include and consider all the risks and the conclusion I draw is that the authors are seeking to place themselves adjacent to the funding tap for geoengineering research if and when it was to occur after the writing of their report.

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The Real Climate Bog on Geo-engineering is not really up to date, but I chose the most recent contribution from 18 October 2009 " Why Levitt and Dubner like geo-engineering and why they are wrong".
The author refers to the ‘Global Cooling’ chapter of the book SuperFreakonomics by Stephen Levitt and Dubner and comments critically on their argumentation. I fully agree with the conclusion he draws, namely that geo-engineering is neither cheap nor a fix, and just contributes to additional risks in the earth system, that are unknown today and that there are ethical and legal reasons against it.

I don't think that it is in any way helpful to get distracted in geo-engineering debates envisioning supposed silver bullet solutions that simply would not work.

But: We should rather combine all forces and take all efforts to mitigate emissions sharply now - and push for politicians to not wait any longer! We just cannot afford it. Discussing geo-engineering now will provide climate deniers and sceptics with more reasons why we don't need to mitigate.

After all that I have learned and heard about the climate challenge so far, I am convinced that we are running out of time, and therefore I'd like to appeal urgently to everyone involved in decision-making not to get caught in side-activities, but to do what's necessary in order to stay within the carbon budget.

Week #10 Activity – Mitigation SAMPLE RESPONSES

SAMPLE RESPONSES FROM students RECEIVING NO CREDIT
Running the app I can see the difference between a visible light photon and an infrared photon.

As expected increasing the concentration of greenhouse gases increases the surface temperature. The simulation is a nice way to show how the system works.

Still the effects can be subtle to the uninitiated. In other words, folks not too familiar with the general problem, may expect bigger changes for changes inputs.

I like the photons tab because it shows how molecules vibrate when they are hit just right with infrared photons.

But even with the simulation as good as it is, it could do with little popups or similar to call out the salient point on each page - a popup or slider to explain what I am looking at and why it matters.

Clearly adding layers of glass is huge.

Adding clouds is a subtle influence in the model.

Increasing the amount of GHG results in proportional increase in the surface temperature.

It should be mentioned that the model is conceptual. It is not meant to be a detailed accurate accounting of the natural order of things. But it clearly explains the concepts.

---
Being unable to run the suggested simulation model (and not really caring, because there are many other good models that I can and have run), I respond to the questions by parading my ignorance.

How does a reduction in CO2 emissions affect the global surface temperature?

A reduction in CO2 emissions has almost no affect on the global surface temperature. In the current situation, the global surface temperature will continue to rise until an equilibrium is reached. The total amount of CO2 in the atmosphere is the major factor determining the equilibrium temperature. We can think of it as the global thermostat. The thermostat is set much higher than the current temperature. A reduction in CO2 emissions means reducing the rate of turning the thermostat up. Because the thermostat is already set too high, we shouldn't be turning it up at all. In fact, we need zero emissions and also ways to turn the thermostat down a bit. Otherwise, the situation will become quite uncomfortable.

What happens when you add clouds?

The effect of clouds depends on the type of cloud because clouds reflect incoming sunlight (a cooling effect because less incoming radiation is absorbed), absorb sunlight (a warming effect), and absorb and emit IR radiation (a greenhouse warming effect). Whether a cloud has a net cooling or warming effect depends on the altitude, density, water droplet size, and composition. Generally speaking, low dense clouds cool and high thin clouds warm.
Do all gases contribute to the greenhouse effect? Which ones do? Which ones do not?

Many gases contribute to the greenhouse effect, and some do not. Basically, gases with molecular vibrational modes with an electric dipole moment are IR active and contribute to the greenhouse effect. In general, this means a molecule with more than two atoms. Nitrogen N2 is almost 80% of the atmosphere and does not contribute to the greenhouse effect. Oxygen O2 is almost 20% of the atmosphere and does not contribute to the greenhouse effect. Trace gases in the atmosphere, such as CO2, CH4, NO2, O3, and HFCs, contribute to the greenhouse effect.

How do photons interact with atmospheric gases?

How a photon interacts with an atmospheric gas depends on the photon energy. A photon is a quantum particle, and understanding its interaction with atmospheric gases requires some understanding of quantum physics and quantum chemistry. Quantum physics generally suffices for understanding how high-energy photons interact to raise electron energy levels. Quantum chemistry is generally needed for understanding the interaction of low-energy photons and phonons in molecules. I won't attempt to explain the basic principles of quantum physics and quantum chemistry in this brief answer. I will simply grossly characterize our usual experience with photon interactions: high-energy photons in sunlight (UV and above) are often called ionizing radiation and low-energy photons are called radiant heat. In between are photons of visible light, which interact with what we often call pigments (chlorophylls, rhodopsin, and photopsins are pigments that are particularly important to humans because without chlorophylls we would starve to death and without rhodopsin and photopsins we would continually bump into reality).

---

I thought that the GHG simulation was quite neat, but it was a *little* simplistic. For instance, it did not represent the time-lag between reduced emissions and reduced temperatures very well (especially significant in the case of CO2, where the build-up is very long-lasting). I'm also not sure what the point of having multiple layers of glass over the earth was all about: it was enough to have one layer to illustrate a "real" greenhouse effect. The clouds were also rather simplistic, as different kinds of clouds can have quite a different effect on surface warming (lower, denser clouds may actually increase warming, rather than decrease it, as in the model).

Overall, a worthwhile task to get us thinking - not just about how the greenhouse effect works, but also about the limitations of the model! But I think it would have been much better much nearer the beginning of the course...

[I also note in passing that the questions about the simulation relate to CO2 emission levels, whereas the simulation actually has to do with concentration levels, rather than emission levels].

---

According to the "About" menu option, this is "PhET Interactive Simulations Copyright (C) 2004 - 2011 University of Chicago." This is version 3.4.00 (56778), constructed on 21 September 2011. We are directed to a page on the Web, at URL, "http://phet.colorado.edu/". This simulation shows photons of sunlight shortwave radiation from above and the photons of the long wave infrared radiation from below the hot ground. There is a thermometer reads the current temperature of the simulated planet.
Four simulations of greenhouse gases, H2O, CO2, CH4, N2O, and change the direction of infrared photons, represented graphically with red dots. The gas concentrations shown individually by condensation or, in the case of water vapor, a relative humidity. The concentrations of all greenhouse gases can be changed collectively with a buffer. Addition of greenhouse gases a selected number of cloud layers modifies the direction of infrared photons.

"How to reduce CO2 emissions affecting global surface temperature?"
There is no control on the emissions of CO2, only the concentrations of CO2. This is not an emission model. After the "Reset All" the concentration of CO2 is the "Today"'s value of 388 ppm. When I set the slider to "None" the temperature stabilizes at 254K. When I set the slider to "Lots," some infrared photons bouncing back to Earth and the temperature stabilizes at 295K.

"What happens when you add clouds or glass?"
Yellow arrowheads stream downward representing sunlight energy. Some of the sunlight reflects off clouds and more can reflect off the earth's surface.

If sunlight is absorbed by the earth, it turns into a red dot, representing heat energy. Each dot represents the energy of one yellow sunlight arrowhead. The red dots randomly move around the earth, and its temperature is related to the total number of red dots.

Sometimes the red dots transform themselves into infrared (IR) light that heads toward space, carrying off energy. The probability of a red dot becoming IR light depends on the earth's temperature. When the earth is cold, few red dots generate IR light; when it is hot, most do. The IR energy is represented by a magenta arrowhead. Each carries the same energy as a yellow arrowhead and as a red dot. The IR light goes through clouds but can bounce off CO2 molecules.

There is a relation between the number of red dots in the earth and the temperature of the earth. This is because the earth temperature goes up as the total thermal energy is increased. Thermal energy is added by sunlight that reaches the earth as well as from infrared (IR) light reflected down to the earth. Thermal energy is removed by IR emitted by the earth. The balance of these determines the energy in the earth, which is proportional to its temperature.

There are, of course, many simplifications in this model. The earth is not a single temperature, does not have a single albedo, and does not have a single heat capacity. Visible light is somewhat absorbed by CO2 and some IR light does bounce off clouds. No model is completely accurate. What is important is that a model reacts in some ways like the system it is supposed to model. This model does that, showing how the greenhouse effect is caused by CO2 and other gases.

"Do all gases contribute to global warming and what do these and what they do?"
"How photons interact with atmospheric gases?"

The "Greenhouse Effect" simulation software does not allow me to enter concentrations for individual gases. Only regulatory changes all gas concentrations at a time. [I run the simulation on a MacBook Pro under OS X 10.6.8 with Java version 13.9.8.]

The "Photon Absorption" simulation does not allow alteration of individual gas concentrations, though. This simulation offers a choice of five gases: CH4, CO2, H2O, N2, O2 and. The first three gases absorb and reradiate infrared some photons scatter. The last
two gases have no effect on infrared photons. Visible light photons have no effect on any of the five simulated gases.

More Detail

• How does a reduction in CO2 emissions affect the global surface temperature?

Future carbon dioxide emissions in the 21st century will hence lead to adverse climate changes on both short and long time scales that would be essentially irreversible (where irreversible is defined here as a time scale exceeding the end of the millennium in year 3000; note that we do not consider geo-engineering measures that might be able to remove gases already in the atmosphere or to introduce active cooling to counteract warming). For the same reason, the physical climate changes that are due to anthropogenic carbon dioxide already in the atmosphere today are expected to be largely irreversible. Such climate changes will lead to a range of damaging impacts in different regions and sectors, some of which occur promptly in association with warming, while others build up under sustained warming because of the time lags of the processes involved. Here we illustrate 2 such aspects of the irreversibly altered world that should be expected.

These aspects are among reasons for concern but are not comprehensive; other possible climate impacts include Arctic sea ice retreat, increases in heavy rainfall and flooding, permafrost melt, loss of glaciers and snowpack with attendant changes in water supply, increased intensity of hurricanes, etc. A complete climate impacts review is presented elsewhere and is beyond the scope of this paper. We focus on illustrative adverse and irreversible climate impacts for which 3 criteria are met:

(i) observed changes are already occurring and there is evidence for anthropogenic contributions to these changes,

(ii) the phenomenon is based upon physical principles thought to be well understood, and

(iii) projections are available and are broadly robust across models.

Advances in modeling have led not only to improvements in complex Atmosphere–Ocean General Circulation Models (AOGCMs) for projecting 21st century climate, but also to the implementation of Earth System Models of Intermediate Complexity (EMICs) for millennial time scales. These 2 types of models are used in this paper to show how different peak carbon dioxide concentrations that could be attained in the 21st century are expected to lead to substantial and irreversible decreases in dry-season rainfall in a number of already-dry subtropical areas and lower limits to eventual sea level rise of the order of meters, implying unavoidable inundation of many small islands and low-lying coastal areas.

It is sometimes imagined that slow processes such as climate changes pose small risks, on the basis of the assumption that a choice can always be made to quickly reduce emissions and thereby reverse any harm within a few years or decades. We have shown that this assumption is incorrect for carbon dioxide emissions, because of the longevity of the atmospheric CO2 perturbation and ocean warming.

Irreversible climate changes due to carbon dioxide emissions have already taken place, and future carbon dioxide emissions would imply further irreversible effects on the planet, with attendant long legacies for choices made by contemporary society. Discount rates used in some estimates of economic trade-offs assume that more efficient climate mitigation can occur in a future richer world, but neglect the irreversibility shown here. Similarly, understanding of irreversibility reveals limitations in trading of greenhouse gases on the
basis of 100-year estimated climate changes (global warming potentials, GWPs), because this metric neglects carbon dioxide's unique long-term effects.

In this paper we have quantified how societal decisions regarding carbon dioxide concentrations that have already occurred or could occur in the coming century imply irreversible dangers relating to climate change for some illustrative populations and regions. These and other dangers pose substantial challenges to humanity and nature, with a magnitude that is directly linked to the peak level of carbon dioxide reached.

• What happens when you add clouds or glass panes?
If you see some that operates a greenhouse
Solar radiation passing through the south glazed gases converted into heat and part directly attributable to the site, increasing its temperature, while part of the components stored in the space (thermal mass) and rendered with a lag.
The transfer of thermal energy accumulated in the solar field, towards the interior of the building is achieved by means of ports or openings in the common structural element.
To reduce heat loss during winter is recommended nightly protection glazing with insulated interior panels, unless the part of the building envelope, in which the solar space is in contact, is insulated.
Similar happens in clouds below
Water vapor, carbon dioxide and methane form a natural barrier around the Earth. However, the burning of fossil fuels has led to the increasing amount of CO2 and other gases such as methane and nitrogen oxides, emitted into the atmosphere. The Earth's surface is heated by the sun. As warm, reflect back heat to the atmosphere.
As a result, the earth is kept warm and the phenomena of life. But the increased amounts of greenhouse gases, changing the balance of this complex system, causing global warming.
• Do all gases contribute to the greenhouse effect? Which ones do? Which ones do not?
The definition of a greenhouse gas is at the same time very simple and very complicated for the ordinary man (or woman!): such a gas is "just" a gas mixed in the atmosphere that absorbs the infrared radiation emitted by the earth's surface. We are not accustomed to these gases because neither nitrogen nor oxygen, the two most abundant gases of the atmosphere (78% and 21%, respectively) that many of us have heard of, have this ability to intercept infrared radiation. But once this is said, what are these gases exactly? And are we the sole emitters for these gases
The "natural" greenhouse gases
The two main gases responsible for the greenhouse effect (and not only its recent increase) are:
  - water vapor (H2O),
  - carbon dioxide (CO2).
There are others such gases, and even many others. Some of them are "natural", which means that they were present in the atmosphere before the apparition of men, and other can be called "artificial", in the sense that they are present in the atmosphere only because of us.
Beyond water and CO2, the other important "natural" greenhouse gases are:
  - methane (CH4), which is nothing else than the cooking gas we use in our stoves,
Nitrous oxide (N2O), the scholarly name for... laughing gas (which is not so much amusing here),
ozone (O3), which molecule comprises 3 oxygen atoms (the molecules of the "regular" oxygen gas have only 2 atoms of oxygen).

When we say that these gases are "natural", it does not mean that men did not play a role in the amount we can find in the atmosphere today. It just means that there are also natural sources (or natural cycles). For these 3 above-mentioned gases, humanity "simply" adds its part to natural emissions and therefore significantly increases their concentration in the air.

All these "natural" gases are taken into account in the international negotiations (like the Kyoto Protocol, for example), except ozone, because as it has no direct emissions. Ozone results from a subtle chemistry taking place in the air, involving "precursors" which are regular pollutants - NOx, hydrocarbons - with the help of sun rays. Calculating - even roughly - the amount of ozone emitted by a country is today clearly very difficult.

The "industrial" greenhouse gases

The main "industrial" greenhouse gases are halocarbons (generic formula CxHyHalz, where Hal represents any halogen) : it designates a vast family of gases obtained by substituting, in a hydrocarbon molecule (propane, butane, or even octane, than can be found in car gas, are hydrocarbons), all or part of the hydrogen by a halogen gas (fluorine, chlorine, iodine...).

The molecules obtained that way have two important properties for our purpose :

They are generally highly efficient to absorb infrared radiation, much more than CO2 (their absorption bandwidths are large).

Some of them (perfluorocarbons par example) are very "solid" : they are extremely stable, and only the high energy ultraviolets or the cosmic rays can "break" the liaisons of these molecules once they are in the atmosphere.

As these degrading processes happen slowly and far from the ground, halocarbon molecules generally have very long residence times in the air, because it is necessary to wait until they get to the stratosphere - even though they are (very) heavy molecules - before they are degraded, and that can require thousands years.

Among the halocarbons we will find a well-known sub family:

the CFCs (for chloro-fluoro-carbons). Not only they are potent greenhouse gases, but they also lead to a decrease in the stratospheric ozone. Their production has been progressively banned, by the way of the Montréal protocol, signed in 1987, and that does not concern the other greenhouse gases.

There is another "industrial" gas that is often mentioned among the experts, sulfur hexafluoride (SF6). It is used, for example, to fill transformers (that require gases that stay inert in extreme conditions) or...double glazings. It is not emitted in large quantities, but is even more potent than any halocarbon and its degradation requires several thousand years.

• How do photons interact with atmospheric gases?

In this posting, we consider the interaction between air molecules, including Nitrogen (N2), Oxygen (O2), Water Vapor (H2O) and Carbon Dioxide (CO2), with Photons of various wavelengths. This may help us visualize how energy, in the form of Photons radiated by the Sun and the Surface of the Earth, is absorbed and re-emitted by Atmospheric molecules.

During the daytime, Solar energy enters the Atmosphere in the form of Photons at wavelengths from about 0.1μ (micron – millionth of a meter) to 4μ, which is called
“shortwave” radiation and is represented as ~1/2µ and symbolized as orange ovals. Most of this energy gets a free pass through the cloud-free Atmosphere. It continues down to the Surface of the Earth where some is reflected back by light areas and where most is absorbed and warms the Surface.

Since Earth’s temperature is well above absolute zero, both day and night, the Surface radiates Photons in all directions with the energy distributed approximately according to a “blackbody” at a given temperature.

This energy is in the form of Photons at wavelengths from about 4µ to 50µ, which is called “longwave” radiation and is represented as ~7µ, ~10µ, and ~15µ and symbolized as violet, light blue, and purple ovals, respectively. The primary “greenhouse” gases (GHG) are Water Vapor (H2O) and Carbon Dioxide (CO2). The ~7µ Photon is absorbed by an H2O molecule because Water Vapor has an absorption peak in that region, the ~10µ Photon gets a free pass because neither H2O nor CO2 absorb strongly in that region, and one of the 15µ Photons gets absorbed by an H2O molecule while the other gets absorbed by a CO2 molecule because these gases have absorption peaks in that region.

The absorbed Photons raise the energy level of their respective molecules (symbolized by red outlines).

The energized molecules re-emit the Photons in random directions, some upwards, some downwards, and some sideways. Some of the re-emitted Photons make their way out to Space and their energy is lost there, others back down to the Surface where their energy is absorbed, further heating the Earth, and others travel through the Atmosphere for a random distance until they encounter another GHG molecule.

This frame and the next two illustrate another way Photons are emitted, namely due to collisions between energized GHG molecules and other air molecules. The Photons cause the GHG molecules to become energized and they speed up and collide with other gas molecules, energizing them.

NOTE: In a gas, the molecules are in constant motion, moving in random directions at different speeds, colliding and bouncing off one another, etc. Indeed the “temperature” of a gas is something like the average speed of the molecules.

The energized air molecules emit radiation at various wavelengths and in random directions, some upwards, some downwards, and some sideways. Some of the re-emitted Photons make their way out to Space and their energy is lost there, others back down to the Surface where their energy is absorbed, further heating the Earth, and others travel through the Atmosphere for a random distance until they encounter another GHG molecule.

SAMPLE RESPONSES FROM students RECEIVING CREDIT

Greenhouse Gas Simulation

The simulation helps to see the difference between some of the greenhouse gases and the effect of cloud albedo on surface temperature. Obviously, there is a direct correlation between GHG and surface temperature. When the gases are reduced the temperature goes down and vice versa. One of the interesting things to see however is the difference in the CO2 concentrations between the ice age and the more moderate climate of the mid-18th century. When clouds are introduced the simulation the reflectivity offers a slight cooling effect of 4-6 degrees. The glass panes (as one would expect) reflect some of the infrared radiation back to earth, helping to
increase surface temperature. The reflectivity of the glass panes shows the potential increase by continuing to emit greenhouse gases.

Most of the greenhouse gases in the simulation absorb infrared radiation, while allowing visible light to pass through unimpeded. Some of that infrared radiation is reflected back to earth. Nitrogen gas (N2) does not seem to have any effect on infrared radiation. This is a good simulation for an introductory lesson on the greenhouse effect and how reflectivity affects surface temperature.

---

Q: How does a reduction in CO2 emissions affect the global surface temperature?
My answer: In the simulation, when you reduce the CO2 emission the global surface temperature goes down. But this does not state the time difference between the time you reduce the CO2 emission and the time it takes effect to lower the temperature. Per our lectures, the GHG emission reduction that you will do now will not take effect immediately as there are already accumulated CO2 in the atmosphere which will stay for around 100 years from the time it was emitted. I wish one of our professors can shed light on this.

Q: What happens when you add clouds or glass panes?
My Answer: In the simulation, When you add clouds the temperature becomes lower, but when you add glass panes the temperature goes up. Please correct me if my understanding is correct: that the glass panes represent the ‘greenhouse effect’, as more glass panes are added the temperature increases.

Q: Do all gases contribute to the greenhouse effect? Which ones do? Which ones do not?
My Answer: The 3 main gases that are in the simulation are: CO2, CH4 (methane) and N2O (nitrous oxide). There are more than 6 GHGs as listed in the IPCC, with their corresponding Global Warming Potential (GWPs).

How do photons interact with atmospheric gases?
Energy, in the form of Photons radiated by the Sun and the Surface of the Earth, is absorbed and re-emitted by Atmospheric molecules.
Appendix F

CC4D MOOC Evaluation Rubric for Activity Reflections
**Evaluation Rubric for Reflective Writing Activities**
We assume that the minimum of 100 words is met and that the writings were submitted on time, because these are the only ones we can evaluate. I don’t think grammar and spelling are relevant for our group of students.

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<th>Novice 0-23 points</th>
<th>Competent 24-47 points</th>
<th>Proficient 48-70 points</th>
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<td><strong>Questions are addressed 70%</strong></td>
<td>Content of answers is off topic</td>
<td>Content contributes at least one insightful idea related to the topic. Only minor points are missing from the answers</td>
<td>Content contributes one or more insightful ideas Questions are addressed completely and in detail</td>
</tr>
<tr>
<td><strong>Comment Organization 30%</strong></td>
<td>Writing is disorganized and does not make sense.</td>
<td>Writing is disorganized but contains important information related to the topic.</td>
<td>Writing clearly explains the topic in an organized way.</td>
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Appendix G

CC4D MOOC Instructions for Project Outline & Final Project
Instructions for Project Outline & FINAL Project:

Create a thread on the discussion forum for Week 6 by Friday, February 14, 2014, 5:00 PM Pacific time. Use the thread to outline your project. Be specific about the topic, audience, and any media you plan to use. The proposal should be at least 250 words. (You may use a word processing tool to count words.)

The project is an opportunity for you to think more deeply about a course topic that is particularly interesting to you. You may choose a topic from the readings, lectures, or current events from one of the dimensions of climate change – policy, science, history or adaptation. Once you have decided on a topic, your challenge will be to design & develop an information piece about that topic for an audience of your choice. You will need to begin this process somewhere around Week #5 because your project outline will be due on Week #6.

Please follow the steps below to complete 1) the project outline (due 2/14/14) and 2) the final project (due 3/17/14):

**Step 1:** Select the topic upon which you will focus (from the readings, lectures, or current events from one of the dimensions of climate change – policy, science, history or adaptation). Below is just a sample of the many topics from which you can choose:

- a new technology
- a policy or legal instrument
- an adaptation plan
- a new breakthrough in climate science

**Step 2:** Identify the audience for which you will develop an information piece on this topic (for example, school-age children,
senior citizens, community leaders, or climate-change activists).

**Step 3:** Decide on the format you will use for your information piece. For example, you may want to:

- write an article for a local (or national) newspaper
- create a presentation
- make a display for an aquarium or museum

You are free to use any number of communication media – be creative!

**Step 4:** PROJECT OUTLINE – create a thread on the discussion forum for Week #6 by Friday, February 14, 2014, 5:00 pm Pacific Standard Time (PST). Use the thread to communicate your **project outline.** Be specific about the topic, audience, and any media you plan to use. The outline should be at least 250 words. (You may use a word processing tool to count words.)

NOTE: Your project outline may be read by some of your peers as well as your instructor so please be sure it is clear and contains all the necessary information.

**Step 5:** Review TWO Peer’s Project Outlines. In order to receive full credit for the project outline, you must also provide peer evaluation to two other students' project outlines. Both of these Peer Reviews are due < >.

Go to the Week #6 discussion forum and select two other threads from your peers. Read the two peer project outlines carefully and then provide helpful feedback. Your feedback should follow the discussion board guidelines and include the following:

- Provide constructive and professional feedback to the project proposal.
• Point out concerns about the topic or presentation.
• Ask questions to the proposal writer to clarify the description.
• Make any other comments you believe would be helpful.

It may also be useful to look at the Peer Feedback Evaluation Rubric to see how you instructor will evaluate the quality of the feedback you provide to your peers.

**Step 6:** Read the instructor and peer feedback you receive about your project outline. Consider how this feedback might be helpful as you create your final project. Also, please look at the Final Project Evaluation Rubric so you can see how your instructor will evaluate your work.

**Step 7: Submit FINAL PROJECT** – Submit your Final Project by creating a thread on the discussion forum for Week #10 final projects by Monday, March 17, 2014, 5:00 PM PST.

Remember, you can use video, photos, PowerPoint presentations, WORD documents, or any other media to show what you have produced. If needed, provide link(s) to your project.

**Step 8:** (Optional) You worked hard on this project so you may also want to consider sharing it through social media.
Instructions for Peer Review:

In order to receive full credit for the project outline, you must also provide peer evaluation to two other students' project proposals.

Peer evaluation is the process of reviewing another’s work against the requirements that have been given and providing constructive feedback. Go to the Week 6 discussion forum and choose two other threads. Your responses should follow the discussion board guidelines and provide feedback to the proposal writer. Follow these guidelines:

- Provide constructive and professional feedback to the project proposal.
- Point out concerns about the topic or presentation.
- Ask questions to the proposal writer to clarify the description.
- Make any other comments you believe would be helpful.

Many students believe the peer evaluation process helps them improve the quality of their own work, both as a result of being a peer evaluator and from the quality of the feedback they receive from their classmates.
**Evaluation Rubric for Peer Review on the Project Proposals:**

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</thead>
<tbody>
<tr>
<td><strong>Feedback Content 40%</strong></td>
<td>Does not provide constructive and professional feedback to the project proposal.</td>
<td>Provides at least one constructive and professional feedback to the project proposal.</td>
<td>Provides more than three constructive and professional feedback items to the project proposal.</td>
</tr>
<tr>
<td><strong>Helpful Comments 30%</strong></td>
<td>Fails to make any other helpful comments.</td>
<td>Makes at least one other helpful comment.</td>
<td>Makes more than three other helpful comments.</td>
</tr>
<tr>
<td><strong>Comment Organization 15%</strong></td>
<td>Comment is disorganized and does not make sense.</td>
<td>Comment is disorganized but contains important information related to the topic.</td>
<td>Comment clearly explains the topic in an organized way.</td>
</tr>
<tr>
<td><strong>Comment typos, spelling, grammar 15%</strong></td>
<td>Numerous typos, spelling, and grammar mistakes.</td>
<td>Only minor typos, spelling, or grammar mistakes.</td>
<td>No grammar mistakes are present.</td>
</tr>
</tbody>
</table>
## Final Project Evaluation Rubric:

<table>
<thead>
<tr>
<th>Categories</th>
<th>Novice (0%)</th>
<th>Nearing Competence (60%)</th>
<th>Competent (80%)</th>
<th>Proficient (100%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Project Topic Content</strong></td>
<td>Project content does not relate to course content.</td>
<td>Project content is indirectly related to course content.</td>
<td>Project content is directly related to course content.</td>
<td>Project content is robust and directly related to course content.</td>
</tr>
<tr>
<td><strong>Project Organization</strong></td>
<td>Project presentation is disorganized. It is difficult to understand the topic content.</td>
<td>Project presentation is minimally organized. Communicate s a minimal level of topic content.</td>
<td>Project presentation is organized and, in most instances, clearly communicates the topic content.</td>
<td>Project presentation is organized and clearly and consistently communicate s the topic content.</td>
</tr>
<tr>
<td><strong>Presentation</strong></td>
<td>There are numerous inaccuracies in the information.</td>
<td>There are one or more critical inaccuracies in the information.</td>
<td>With a few minor exceptions, the information is accurate.</td>
<td>All information is accurate.</td>
</tr>
<tr>
<td><strong>Project Originality</strong></td>
<td>The vast majority of the project includes material that has been produced by someone else.</td>
<td>Project demonstrates some novel elements in content and format.</td>
<td>Project demonstrates a fair number of novel elements related to content and format.</td>
<td>Project demonstrates numerous novel elements related to content and format.</td>
</tr>
</tbody>
</table>
Appendix H

CC4D MOOC Evaluation Rubric for Final Project
<table>
<thead>
<tr>
<th>Categories</th>
<th>Novice</th>
<th>Nearing Competence</th>
<th>Competent</th>
<th>Proficient</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Project Topic Content</strong></td>
<td>Points: 25 Project content does not relate to course content.</td>
<td>Points: 50 Project content is indirectly related to course content.</td>
<td>Points: 75 Project content is directly related to course content.</td>
<td>Points: 100 Project content is robust and directly related to course content.</td>
</tr>
<tr>
<td><strong>Project Organization Presentation</strong></td>
<td>Points: 25 Project presentation is disorganized. It is difficult to understand the topic content.</td>
<td>Points: 50 Project presentation is minimally organized. Communicates a minimal level of topic content.</td>
<td>Points: 75 Project presentation is organized and, in most instances, clearly communicates the topic content.</td>
<td>Points: 100 Project presentation is organized and clearly and consistently communicates the topic content.</td>
</tr>
<tr>
<td><strong>Information Accuracy</strong></td>
<td>Points: 25 There are numerous inaccuracies in the information.</td>
<td>Points: 50 There are one or more critical inaccuracies in the information.</td>
<td>Points: 75 With a few minor exceptions, the information is accurate.</td>
<td>Points: 100 All information is accurate.</td>
</tr>
<tr>
<td><strong>Project Originality</strong></td>
<td>Points: 25 The vast majority of the project includes material that has been produced by someone else.</td>
<td>Points: 50 Project demonstrates some novel elements in content and format.</td>
<td>Points: 75 Project demonstrates a fair number of novel elements related to content and format.</td>
<td>Points: 100 Project demonstrates numerous novel elements related to content and format.</td>
</tr>
</tbody>
</table>
Appendix I

Sample of Peer Reviews of Initial Project Outlines
Samples of Peer Reviews of Students’ Project Outlines

Project Outline: Renewable Energy for School District

Hi <name deleted>, great project! I have a good friend who lives in Grand Rapids, beautiful area! Having installed solar on my home and developing a business case for myself, I would also recommend as part of your initial project phase to obtain electricity usage and cost data for the school over the past several years. The solar PV companies will need this information to provide you a proposal. Another thing to consider is that rather than buying a PV system outright, which requires significant upfront capital, it might make sense for the school to enter into what’s called a power purchase agreement (PPA). With a PPA there’s very little out of pocket expense. The solar PV company installs and owns the solar PV system and the school agrees to pay a long term monthly fee for the electricity supplied, e.g., 15-20 years. In California the monthly fee is generally 10-20% less than current utility payments so it’s justifiable from day one. Good luck! <name deleted>

PROJECT OUTLINE: Adaptation of climate change in town and country planning

Hi <name deleted>, I have some comments from my personal perspective that you may want to consider:
- It may be useful to narrow the targeted audience to which towns and which country to have the best effect. May be it’s in your plan already, but it can be spelled out.
- Define the examples and area according to the targeted audiences, direct area or area comparable with the targeted area.
- In part 1 of Adaptation, concentrate on symptoms that are highly likely or that have already been recorded (sea level rising) (ref. summary of IPCC 4 required reading) to limit the kind of critics such as: we are still not certain about the relationship between CC and storms.
- Adaptation actions are broad, you may want to present the whole picture but concentrate on 1-2 specific areas of adaptation only.

Congrats on your serious and challenging project. I would also like to ask for a favour, since I also submitted my outline quite late, could you review mine (last thread with the subject: project outline – make it useful in practice?) since I will not likely get the attention of colleagues who have been active earlier and have done their share of peer review. Thanks a lot in advance. <name deleted>

Project Outline: Do trees grow on money?

Hi Janina, great topic! Do you anticipate people being able to view your presentation on their own? Because I think the most powerful presentations are ones that have good visual content, e.g., images, graphs, diagrams, with less text. You may want to consider doing a recorded presentation where you record your voice-over giving the
presentation. Or include all the information (the verbal discussion) for each slide in the notes section. Have you heard of a "lightning talk"? It's a 5-minute, 15-slide presentation where you cover each slide in ~20 seconds. This requires you to be succinct and powerful in your communication. It also ensures that your audience won't become distracted - since most of us have short attention spans!

Beyond the CCin4D where else could you consider publicizing your presentation? Perhaps with local community groups or online somewhere?

I wonder as climate change progresses what will be the challenges to reforesting vast areas where water is likely to be in short supply and temperatures higher than trees have evolved to manage?

Best,
<name deleted>

Project Outline: Banning Fracking in California

Hi <name deleted>,

<name deleted> from Ashland, OR here. I am very excited to see you are planning to travel to Sacramento to participate in a rally regarding Fracking. I would suggest you try to make an appointment to meet with your state senator and assemblyperson.

Perhaps a good approach, especially in this drought, would be to remind them of the importance of water to California agriculture and that California can not risk any possible diminution of it’s water resources secondary to Fracking associated contamination. Perhaps pick a specific area that has proposed fracking activity in the future, and then educate your audience about the water supply for that region, and how fracking threatens that water supply. Perhaps it is the grape/wine industry of Temecula, or whatever. Just a thought. Thanks for going to Sacramento!

Project Outline: The Carbon Market Project

Dear <name deleted>,

I agree with my colleagues that you chose a great topic. I think we all might learn a lot from your project as you seem to have a lot of experience in the area, already.

Personally, I have great interest in understanding how the CDM works due to my professional background, as I’m working in a project that relates to carbon reduction and compensation payments, though in quite a different context (forests, REDD+, non-market mechanism).

As the Carbon market is a somehow abstract topic because carbon and CO² as a “currency” aren’t common to the vast majority of people, I’d like to suggest that you could try to work on what Prof. Sommerville taught in climate communication and the use of metaphors and images in your presentation.

I’l definitely take a look at your final project in order to learn on CDM due to personal interest,

best regards, <name deleted>
Project Outline: Effects of Climate Change

Hi, <name deleted>, I really like your idea of posting your information on-line and making infographics that teach quickly. It would be helpful to narrow your audience a bit. Focus on a group that you think is important to educate and then give them something to do. With all this very scary information, we need to provide people with options they can act upon. The more and different ways people respond to the threat of climate change, the more effective mitigation and adaptation will be. I know it's late to ask, but if you have any ideas for me, please let me know. Thanks,<name deleted>

Project Outline: Climate Change and Our Health
Hi <name deleted>,
Great topic. I like the idea of relating climate change to our physical and mental health. I'm wondering, do you currently work in the health field, and if not, how did you get interested in this topic? One area that seems worth exploring would be the estimates of how many climate refugees are estimated in the coming decades and what those stresses will do to the mental health of the population. I'm also particularly interested in how climate change (and climate refugees) will impact infectious disease and epidemiology. I would be interested to see what you come up with. Please feel free to share!
<name deleted>
Appendix J

Sample of Final Projects (URLs)
CC MOOC Final Project Samples* (FOR CREDIT Students only)

Do Trees Grow on Money? – PPT
http://onlinex.ucsd.edu/MOOC/projects/cc4d_finalproject_trees.pdf

Climate Game – PPT
http://onlinex.ucsd.edu/MOOC/projects/cc4d_finalproject_ccQuiz.pdf

Keystone XL Pipeline Project
Part 1:
http://onlinex.ucsd.edu/MOOC/projects/cc4d_finalproject_keystone01.pdf
Part 2:
http://onlinex.ucsd.edu/MOOC/projects/cc4d_finalproject_keystone02.pdf

Humans Play Major Role in Causing Global Climatic Change –Word Doc
http://onlinex.ucsd.edu/MOOC/projects/cc4d_finalproject_humans.pdf

The Carbon Market – PPT

Project on Ocean Acidification – PPT
http://onlinex.ucsd.edu/MOOC/projects/cc4d_finalproject_OceanAcidification.pdf

Climate Change at Children's Perspective
https://www.youtube.com/watch?v=fGQOKjyFPz4 - YouTube Video

Climate Change Web Quest – Google Site page
https://sites.google.com/site/ccwequest/

* Used with permission of students
Appendix K

Climate Change MOOC Marketing Activities & Results
Climate Change MOOC
Marketing Activities & Results

Overall Extension Website Stats (September 2013 – January 2014)
• Total Views: 3914
• Total Time Spent on Site: 1-5 minutes (40%), 5-10 minutes (20%), 10-30 minutes (20%)
• Countries (Top 3): United States (40%), India (3%), United Kingdom (2%), Philippines (2%)

Specific Marketing Activities
• UCSD Extension Web Marketing
  o MOOC landing page (mooc.ucsd.edu)
  o Posting in highlights section on various landing pages
    ▪ Life Sciences, Engineering, IT, Public Service, Business
  o Web Ads (top right corner)
  o – Extension Home Page, Engineering, Life Sciences, Business, Public Service
• Paid Advertising
  o Google Adwords
    ▪ 409 clicks, 62,000 impressions, $556.00 paid total
    ▪ Dates of ad run: September 2013 – January 2014
      • Note: $5-$10 daily budget, $1.36 per click
  o Social Media Advertising (targeted towards markets identified)
    ▪ LinkedIn
      ▪ 821 clicks, 2.6 million impressions, $1642.00 paid total
      ▪ Dates of ad run: November 18, 2013 – February 1, 2014
        o Note: $20 daily budget, $2.01 per click
    ▪ Facebook
      ▪ 461 clicks, 127,000 impression, $560.00
        o Note: $20 daily budget, $1.21 per click
• Direct Email Announcements
  o Announcement regarding course was included at least 1x during the Fall quarter in each of the following areas of study:
    ▪ Business
    ▪ Life Sciences
    ▪ Engineering
    ▪ Public Service
    ▪ IT & Software Engineering
  o Click Thrus: 250+
  o Impressions: 30,000
• Press Relations
  o November 26, 2013 (National Release) via PR News Wire
    ▪ Title: “Renowned UC San Diego Scientists Offer Free Online Climate Change Course”
    ▪ Appeared on 275 media websites
• Video
  o MOOC Promotional Video
    ▪ Posted on UCSD Extension YouTube Channel
      ▪ 122 views
    ▪ Posted on Coursera Home Page
      ▪ Total Views: Unknown
• **Social Media/Blog**
  o **Linked In**
    • Posted 2-3 times in the following Linked In groups:
      - Green
      - Climate Change - I Care!
      - UCSD Alumni
      - SIO
      - Carbon Careers
      - Carbon Footprint Forum
      - SD Biotech Network
      - SD Life Sciences Network
      - SIMB
  o **Blog**
    • “Closing the Climate Change Perception Gap”
      • Posted August 6, 2013
    • “UCSD to Offer Free Online Climate Change Course”
      • Posted December 5, 2013
    • “Mid Year Report from the Dean, January 2014”
      • Sub-article: “SIO MOOC Course Draws 13,000”

• **Catalog/Magazine**
  o Extension Fall Catalog (40,000 catalogs distributed)
    • Highlights in following areas of study:
      - Business
      - Engineering
      - IT & Software Engineering
      - Life Sciences
      - Public Service & Social Responsibility
    • Full page ad in Life Sciences area
  o Fall Magazine (60,000 distributed)
    • Highlights in following areas of study:
      - Business
      - Engineering
      - IT & Software Engineering
      - Life Sciences
      - Public Service & Social Responsibility
1. **Title:**
   Evaluating the Growth of Mathematical Knowledge for Teaching in Preservice Teacher Education.

2. **Author:**
   Michael Gilbert, Ph.D.

3. **Affiliation:**
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   Center for Science and Mathematics in Context (COSMIC)
   College of Education and Human Development

4. **Address:**
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   Boston, MA 02125-3393

5. **Email:**
   mike.gilbert@umb.edu
   http://umb.edu/cosmic/msep

6. **Abstract:**
   Current research in mathematics education has defined several domains of Mathematical Knowledge for Teaching (MKT), the mathematical content knowledge teachers use in the practice of teaching. Research has shown that a teacher’s MKT has a significant impact on student progress, which immediately suggests the possibility that improving teacher content knowledge may result in improved student learning. However, little investigation has been done measuring the level and growth of MKT in preservice teachers. This paper reports on a study of how teacher candidates learn the elements that comprise content knowledge for teaching. Pre- and post-test scores on the University of Michigan’s Learning Mathematics for Teaching (LMT) instrument are reported and analyzed, and the resulting implications for preservice teacher education are discussed.

   Full paper begins on next page.
Evaluating the Growth of *Mathematical Knowledge for Teaching* in Preservice Teacher Education.

**Introduction**

As the public school system has grown over the last five decades to accommodate an increasingly diverse student population, pressures to improve student achievement in public schools have also increased. Schools are challenged to increase student academic achievement, particularly in the core subject areas of language arts and mathematics. Current research in mathematics education has defined several domains of *Mathematical Knowledge for Teaching* (MKT), the mathematical content knowledge teachers use in the practice of teaching (Ball, Thames, & Phelps, 2005). Further, investigations involving inservice teachers have demonstrated that MKT has a significant impact on student progress (Hill, Rowan, & Ball, 2005; Olson, Im, Slovin, Olson, Gilbert, Brandon, Yin, 2010), which immediately suggests the possibility that improving teacher content knowledge may result in improved student learning. However, little investigation has been done measuring the level and growth of MKT in preservice teachers. This paper reports on a study of how teacher candidates learn the elements that comprise content knowledge for teaching. Pre- and post-test scores on the University of Michigan’s *Learning Mathematics for Teaching* (LMT) instrument are reported and analyzed, and the resulting implications for preservice teacher education are discussed.

How to create and assess experiences that develop this knowledge in teachers is only beginning to be studied. While the construct of *Pedagogical Content Knowledge* (PCK) first proposed by Lee Shulman in 1986 has gained significant currency over the years, there is much still to be learned about what knowledge teachers need to possess and how to inculcate that knowledge in them. According to Ball, Thames, & Phelps (2008), “the field has made little progress on
Shulman’s initial charge: to develop a coherent theoretical framework for content knowledge for teaching” (p. 394). Much less research has been done to investigate how this knowledge develops within the preservice education experience. Understanding this process is both timely and necessary for everyone with an interest in improving teacher training programs. The focus of this research is to increase understanding of the domains of MKT and, importantly, to trace the process through which this specific content is learned and is practiced. This project examined elementary preservice teacher candidate’s developing understandings of mathematics and MKT through their preservice coursework. I examine candidates’ participation in a teacher education program using a situated lens to examine how individuals learn to teach through both classroom experiences and working through the specific mathematics used in teaching.

**Theoretical Framework**

The purpose of this study was to increase the field’s understandings of what teachers need to know in order to effectively teach mathematics and how they come to hold this knowledge. The domain of MKT should be understood as encompassing not only the mathematical knowledge common to individuals working in diverse professions, but also the subject matter knowledge that supports that teaching, for example, why and how specific mathematical procedures work, how best to define a mathematical term for a particular grade level, and the types of errors students are likely to make with particular content. (Hill, et al., 2008)

It would be an error to assume the majority of elementary preservice teachers automatically possess the requisite MKT needed to teach mathematics successfully. Traditionally, teachers’ mathematical knowledge has been measured largely by the number of college mathematics courses taken (Hill, Ball, Sleep, and Lewis, 2007). However, the mathematics taught in college content and methods courses is often quite different than the mathematics used in teaching (Gilbert & Coomes, 2010). Studies over the last two decades have suggested that while many
teachers may have a specific type of mathematical knowledge, they often lack a deep understanding of basic mathematical ideas (Ma, 1999). In fact, Adler and Davis (2006) suggest that teachers often compress and abbreviate mathematical knowledge. This situation is particularly challenging within the context of teaching practice, since helping students unpack mathematical knowledge can provide critical entry points through which students gain understanding, and therefore is necessary for teaching.

The need to understand how individuals understand and subsequently teach mathematics has concentrated research into teachers’ mathematical knowledge as it concerns the depth, connectedness, and explicit articulation of the specific mathematics of teaching arithmetic (Ball & Hill, 2004; Ma, 1999); and suggests that deepening the specialized content knowledge that teachers need to teach effectively may require a very different approach to professional learning than has occurred in the past (Ball & Cohen, 1996; Schneider et al., 2000). This study extends that work and will examine the growth of MKT in preservice content and methods classes.

Researchers from the University of Michigan were the first to suggest that the bright line between subject matter knowledge and PCK obscured additional domains that could prove useful for understanding teaching. In particular, they posited that there were domains of content knowledge were used specifically for teaching, Mathematical Knowledge for Teaching (MKT). A visual representation of the additional domains is shown in Figure 1. To test their hypothesis, they created a set of multiple

![Figure 1: Domains of Content Knowledge for Teaching (Ball, Thames, & Phelps, 2008).](image)
choice items that focused on the mathematics used in teaching. Hill, Rowan, & Ball (2005) found that MKT has a significant positive effect on students’ learning of mathematics.

The conceptual foundation for MKT is based in the recognition that just as many professions require practitioners to possess skills that are distinctive to their work, teaching mathematics in school requires an understanding of mathematics that extends beyond the ability to calculate correct answers. Each day in the classroom, teachers use their MKT to identify how mathematical tasks relate to and build upon one another, and to recognize and then explain to students how concepts, representations, procedures, and skills are mathematically interrelated and interconnected. Three forms of MKT are central to understanding the interplay between teaching practice and mathematics (Lenges, Coomes, & Gilbert, 2009). These three categories of MKT are described in Table 1 below.

<table>
<thead>
<tr>
<th>Categories</th>
<th>Description</th>
<th>Examples in Practice</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Conceptual understanding and rationale for use of procedures</td>
<td>The teacher has conceptual understanding of a mathematical procedure and can articulate the relationships between skills and concepts. The teacher knows what it means to understand a procedure and how that differs from simply being able to “do” it. The teacher can articulate the mathematical concept and make it an object of study.</td>
<td>• Identifying the cognitive demand of a task (Henningsen &amp; Stein, 1998).&lt;br&gt;• Creating evaluation or scoring rubrics specific to a mathematical task.&lt;br&gt;• Selecting mathematical manipulatives or models.</td>
</tr>
<tr>
<td>2. Multiple solution strategies and how these strategies connect</td>
<td>Given a problem, a teacher knows multiple representations for appropriate mathematical strategies including the commonly used five representations: written symbols, spoken symbols, manipulatives, real world, and pictures (Lesh, 1979) and the relationships among them. This demands a full understanding of the particular features of each representation and what is highlighted and diminished in that representation. It also requires knowing how minor shifts in one representation affect another representation.</td>
<td>• Providing multiple explanations to students&lt;br&gt;• Anticipating students’ solution strategies&lt;br&gt;• Designing or modifying mathematical tasks so that they have multiple entry points&lt;br&gt;• Answering students’ questions about “when are we ever going to use this”&lt;br&gt;• Creating mathematical tasks that are contextually relevant to students</td>
</tr>
</tbody>
</table>
3. Mathematical reasoning & justifications for mathematical moves

A teacher tracks, conceptualizes and articulates mathematical reasoning or justifications for their own and for student mathematical moves. This happens while examining students’ spoken, written or constructed work as well as providing clear explanations or engaging in error analysis.

- Recognizing and diagnosing the source of student errors
- Question posing for teacher to become clear about student thinking
- Evaluating novel strategies to determine generalizability

**Research Question**

The working hypothesis for this study was that the growth of preservice teachers’ general mathematics content knowledge and subsequent MKT has a direct influence teaching practice, and in the evolving classroom expertise of preservice teachers. The following research question guides the work of the study:

**RQ 1:** How does preservice teachers’ general understanding of mathematics and MKT develop and advance during preservice coursework?

**Methodology**

The subjects of the study were in a graduate licensure program at a public university in New England. Across three years and a total of eight classes, 139 preservice elementary teacher candidates took a pretest on the first class day and the posttest during the last class. Class sizes ranged from 10 to 22 students. The course covered both content and methods for teaching elementary mathematics. It was a 3-credit course and met for two hours and forty-five minutes each week. As a graduate program, the students were somewhat older than the average undergraduate college student. And as a state university in an urban location, a large majority of students were working full-time in fields not related to education.

In most of the elementary schools where the students were going to be placed for student teaching (and where they ultimately hoped to be employed as teachers), a single teacher is charged with teaching mathematics, reading and language arts, social studies, and science. A
majority of the preservice teachers had not taken a mathematics related course for an extended
time in many cases, with the result that their confidence level in mathematics was low. The focus
for the class was centered in understanding the conceptual basis for elementary school
mathematics. This entailed digging deeply into topics such as factors, prime numbers, prime
factorization, divisibility, and fractions fractions fractions.

Results
As an aggregate group, the preservice teacher candidates had a mean improvement of 15% from
pre- to posttest, with the averages by class ranging from 37% to 0%. Table 2
shows the results of each class. A 15% average increase across all sections,
while substantial, does not necessarily guarantee that all of the preservice
candidates will begin their teaching careers with sufficient MKT to
effectively guide student learning. Given the significant variation of the
individual student scores, with one student increasing 73% and another
student decreasing 21%, making inferences about causality would be
premature. But a deeper look into the results could provide some insights
into common misconceptions that could be addressed in coursework. While
some items were correctly answered by virtually all of the preservice
candidates, some items proved to be much more challenging.

The test items are not released to the general public, so they cannot be
reprinted here. So the examples will only be discussed in general terms. For
example, one item that was only answered correctly by 14% of the 117
students who took a particular pretest presented a novel approach for
dividing fractions and asked the test taker to select the correct response from

<table>
<thead>
<tr>
<th>Table 2: Class Data</th>
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<tbody>
<tr>
<td>mean</td>
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<td>-------</td>
</tr>
<tr>
<td>1</td>
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<td>7</td>
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<td>8</td>
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</tbody>
</table>
five choices. The same item was on the posttest taken by 65 of the preservice teachers, and was answered correctly by 25% of the students. While an improvement, it should be noted that only about one-half of the students who correctly answered the question on the pretest managed to get the correct answer on the posttest.

On another item, 16% of the 117 students correctly responded to a question asking for an identification of the error in a two-digit subtraction problem. And 27% of students could interpret an area model for the multiplication of a one-digit number by a two-digit number. These particular items were not on the posttest, so no conjecture can be made about growth in this case.

On the posttests, the most difficult content was seen on two fraction items and on one that asked for an explanation of division by $\emptyset$. Fraction tasks were well represented in the posttest, with 6 of the 14 items designed to investigate conceptual understanding of fractions (and some of the items required multiple answers). While the preservice candidates’ scores increased across most of these problems, a problem asking them to identify an unusual (but correct) method for fraction division seemed to be less familiar.

**Discussion**

In answering the question of how preservice teachers’ general understanding of mathematics and MKT develop and advance during preservice coursework, this paper attempts to increase the field’s understanding of the role of preservice coursework in knowledge development and learning to teach. While recognizing that teacher content knowledge has a positive effect on student learning, elementary preservice coursework has largely been focused on general pedagogical strategies. The research of this project focused on the mathematics knowledge to teach in elementary schools and how teachers achieve this understanding. As the connections between teaching effectiveness and MKT are better understood as a result of this research,
teacher educators will be better equipped to prepare preservice teacher candidates to become effective teachers.
References


Olson, J., Im, S., Slovin, H., Olson, M., Gilbert, M., Brandon, P., Yin, Y. (2010). Effects of two different models of professional development on students’ understanding of algebraic concepts. *Proceedings of the 32nd Annual Conference of the North American Chapter of the International Group for the Psychology of Mathematics Education* (PME-NA). Columbus, OH.


Looking beyond single answers

1. **Title:**
   Looking beyond single answers: A practice to increase preservice teachers’ capacity to interpret student work in proportional reasoning

2. **Author:**
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6. **Abstract:**
   Ratios and proportions top the list of “hard to teach” and “hard to learn” topics in middle and high school. In this paper, student work on a non-standard proportional reasoning task is explored which extends the standard “fraction = fraction” proportion equation to require reasoning, not algorithms. The variety of approaches shows how students can make sense of proportional reasoning.

   Full paper begins on next page.
Looking beyond single answers: A practice to increase preservice teachers’ capacity to interpret student work in proportional reasoning

Introduction
The concepts of ratio and proportion play important roles in mathematics (Nabors, 2002). Beginning in sixth grade, the Common Core State Standards for Mathematics include study of ratio concepts and stress the use of ratio reasoning to solve problems (CCSS, 2010). According to NCTM’s Curriculum and Evaluation Standards (1989), “the ability to reason proportionally is of such great importance that it merits whatever time and effort that must be expended to assure its careful development” (p. 82). However, they are well-known for causing difficulty for middle school students (Lamon, 2007; Mitchelmore, White, & McMaster, 2007). Lamon (1999) further noted that proportional reasoning has typically been taught as “a single chapter of the mathematical text book, in which symbols are introduced before sufficient ground work has been laid for students to understand them” (p. 167). And yet, almost two decades later, Lamon estimated that “more than 90% of adults do not reason proportionally” (2007, p. 637). In this paper, a task is explicated where the solution requires mathematical reasoning, rather than an algorithmic approach.

Theoretical Framework
“Proportional reasoning involves understanding the multiplicative relationships between rational quantities” (Boyer, Levine, & Huttenlocher, 2008, p. 1478). And yet, of all the topics in the school curriculum, fractions, ratios, and proportions arguably hold the distinction of being the most challenging in terms of development, the most difficult to teach, the most mathematically complex, the most cognitively challenging, the most essential to success in higher mathematics and science, and one of the most compelling research opportunities (Lamon, 2007).
There are numerous examples in the literature that demonstrate the need for students to develop an understanding of the concept of proportionality well beyond procedural use of the “fraction = fraction” proportion equation that has traditionally been the sole focus of instruction in proportional reasoning. While the standard missing value proportion algorithm makes the calculation easy to compute, for students to gain a deeper understanding of proportionality, “instruction must play an active role in its emergence” (Lamon, 2007, p. 637). Lacking a conceptual understanding often results in students using an algorithm “to avoid proportional reasoning rather than to facilitate it” (Lesh, Post, & Behr, 1988, p. 94). There is a need for students to develop conceptual proportional reasoning ability through experiences with problems that explore the relationships between covarying quantities. Further, proportional reasoning is a necessary prerequisite for performing at the highest level of statistical literacy (Watson & Callingham, 2003), and student success in secondary science is decidedly dependent on proportional reasoning ability (McLaughlin, 2003). Akatugba and Wallace (1999) wrote that almost every concept in physics requires an understanding of proportional reasoning, and students who do not have this understanding have difficulty mastering the concepts. Accordingly, teachers have been urged to focus students’ attention on the meaning of problems and to help students value different mathematically correct solutions to a single problem (NCTM, 1989, 1991, 2000, cited in Weinberg, 2002). This paper includes not only a task and sample student work, but also provides insights into the mathematical understandings involved. The student work samples shown in this report were collected from middle and high school students and preservice teachers over a period of two years, and the samples presented here are very representative of the solutions and approaches seen across all groups of students.

**Question 1: Which class is larger?**
The example task for this article is a non-standard proportional reasoning task that involves comparing ratios. In the problem, second graders and sixth graders are paired as *Study Buddies,*
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where two-thirds of the second graders are paired with three-quarters of the sixth graders. In this
task, students must reason beyond comparing the absolute size of fractions to recognize that
two-thirds of one quantity (the number of second grade students), must equal three-quarters of
another quantity (sixth grade students). The solutions shown illustrate the variety of approaches
students take as they attempt to make sense of proportional
reasoning. The big idea in the Study Buddies problem is
that students must recognize that the quantities to be
compared are ratios, not fractions.

Ratios have two properties that are not necessarily present
in the traditional part-whole representation of fractions.
First, the task specifies a relationship between two
quantities in a situation (the number of paired students).
And second, this equivalence relationship is projected onto a second situation where the ratios of
the two quantities remain the same, even as the total number of students in each class can vary. In
this example, two-thirds of one quantity must equal three-quarters of another quantity. This type
of problem can help students develop a deeper understanding of proportional reasoning as they are
guided through a sequenced progression of tasks. Before reading on, take a moment to think
through the problem. What is the question asking the solver to do? What are the salient features
that provide clues to possible solution approaches? If two-thirds of one number is the same as
three-fourths of another number, could the numbers be equal? Why or why not? And if not, how
can you use reasoning to make conclusions about the relative size of the two classes?

Study Buddies Question 1:

Lincoln Elementary pairs 2nd and 6th grade students as “Study
Buddies.” Two-thirds of the 2nd graders are paired with
three-fourths of 6th graders.

Are there more 2nd graders or more 6th graders?

How do you know?

Adapted from Lamon (2005)

Figure 1: The Study Buddies Task
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There are several ways to answer this question. The first several examples will show types of reasoning that correctly solves the problem. The student in Figure 2 used reasoning rather than calculation. This student concluded that since the percentage of paired 2nd graders is smaller than the percentage of paired 6th graders, the class of 2nd graders must be larger. The student understood that if the number of paired students was equal, the class that had the smaller percentage of paired students must total more students altogether. In this case, the student’s short explanation provides evidence of proportional thinking.

The student in Figure 3 took a complimentary approach, using ratios of non-paired students, and correctly reasoned that there must be more second than sixth graders because the non-paired ratio of second grade students is greater. Very few students used this as their first approach. However, during class discussions of the problem students often say this would be a good way to work similar problems in the future.

The student work shown in Figure 4 identifies the ratios and then states that “there are more 2nd graders.” Since the student did not provide a rationale for this answer, it is possible that the student used one of the approaches seen earlier, or another different approach. In cases such as this, potential follow-up questions might include: How did you use the ratios to help you draw your conclusion? Or, can you name a different pair of ratios that would also tell you that there were

Figure 2: Correct reasoning with explanation

Figure 3: Reasoning from the complement

Figure 4
Looking beyond single answers

more 2nd graders? These questions can prompt students to think about the reasoning that underlies the conclusion.

Tables can provide a bridge to the follow-up task which asks students to find the ratio of the total number of 2nd to 6th grade students, but few students choose to create tables to test possible numbers. Figure 5 shows one student’s work on a table which identifies both 6 and 12 as possible pairings.

A set of common misconceptions also was seen in the student work. Students whose instruction in fractions has largely been limited to part-whole comparisons will often draw on the absolute sizes of the two ratios in the problem, and then conclude that the larger fraction should have the larger number of students. The student whose work is shown in Figure 6 seems to have concluded that there are fewer 2nd graders. This student probably is considering \( \frac{2}{3} \) and \( \frac{3}{4} \) as fractions from a part-whole perspective, not as ratios which represent equal quantities of paired students. Several students also approached the problem as an absolute comparison from a visual perspective (Figure 7).

It is common for students to initially assume that the number of 2nd and 6th graders must be equal. Figure 7 includes a graphic with the statement that there is an equal amount. The student in this example makes the simple mistake of
misunderstanding the context of the problem, showing two circles divided into three and four sections. The student in Figure 8 is also approaching the problem from a part-whole perspective, noting that there are more shaded circles with $\frac{3}{4}$ than with $\frac{2}{3}$.

As explained by the student, Figure 9 determines the equivalent fractions with the common denominator of 12. While the conversion is correct, the result is misleading. When the ratio of ‘paired’ students in each class is written as $\frac{8}{12}$ and $\frac{9}{12}$, it means that eight out of twelve students in the second grade have a study buddy, and that nine out of twelve students in the sixth grade have one, and that each class has twelve students. But the context of the problem specifies that the students are paired, which implies that the number of students with study buddies in each class must be equal. The numerator is only “bigger” in this case because the class sizes were made equivalent, not the number of paired students. This misconception also causes stumbles in Question 2, which asks students to determine the ratio of students in the two classes who have study buddies.

**Question 2: What is the ratio of 2nd to 6th grade students?**

Question 2 requires students to not only recognize that the classes have a different number of students, but to determine the ratio of the size of the two classes. This is where the student’s understanding of the expression “$\frac{2}{3}$ of the 2nd graders are paired with $\frac{3}{4}$ of the 6th graders” becomes important. Do the students recognize what this implies for the relative size of the classes? And how can the situation be represented mathematically? A recognition that the number
Looking beyond single answers

of students in the two classes are not equal (Question 1) will help to tease out the underlying
misconception of rewriting the ratios as common
denominators for the basis for their comparisons.

**Question 2, the use of a common denominator approach.**
Typically, student work samples fall into three categories:
Pictorial, Numeric, and Algebraic; although other
representations might be seen. Two pictorial, or visual,
representations are seen below in Figure 10. Think about
how each student has approached the task, and what the
drawings say about their understanding. For example, the first drawing uses a grouping strategy,
while the second has chosen an area model.

![Student Work Examples](image)

*Figure 10: Student Work Examples*

The most interesting component of the visual approaches is that they make the equal quantities,
the paired students, very obvious. The example on the left shows each grade is grouped together,
two out of three of the second graders and three out of four sixth graders are “paired” (underlined),
with three groups of 3 second graders and two groups of 4 sixth graders. This figure clearly shows
9 second and 8 sixth graders, leading to the ratio 9:8. The visual representation on the right side
also visually demonstrates a situation where two out of three of a quantity can equal three out of
four of another quantity. In both of these examples, the students demonstrate an understanding of
the concept of ratio, which extends beyond the part-whole construction of fractions.

<table>
<thead>
<tr>
<th>Study Buddies Question 2:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lincoln Elementary School pairs 2nd and 6th grade students as “Study Buddies”</td>
</tr>
<tr>
<td>If ( \frac{2}{3} ) of the 2nd graders are paired with ( \frac{3}{4} ) of the 6th graders, what is the ratio of 2nd to 6th grade students?</td>
</tr>
</tbody>
</table>

*Adapted from Lamon (2005)*

*Figure 9: Question 2*
Looking beyond single answers

While the first two approaches made the relationship visually explicit, the numeric representations shown in Figure 11 uses fractions equivalent to the original ratios to show the number of paired students and the total of students in each class. Look carefully at each representation and consider the quantities that are compared in each example. The student work shown on the left rewrites equivalent fractions with the numerators of each ratio displaying a common number of “paired” students. This common numerator approach is appropriate and shows flexible understanding of ratio, but it is not a “commonly” used answer.

The student work shown on the right is representative of a method that is popular (in this study roughly 40% of students make this mistake), but unfortunately, this approach often leads to an incorrect result. Writing the fractions with a common denominator implies that the number of students in each class is equal. Students often reason that this leaves 8 out of 12 second graders to be paired with 9 of the 12 sixth graders. The ratio of second to sixth grade students is then written as 8:9, not 9:8.

Figure 11: Student work examples showing common numerators and common denominators
Looking beyond single answers

The student in Figure 12 also chose to find common denominators. In this case after the ratios were rewritten with common denominators, the comparison of eight-twelfths to nine-twelfths and eight to nine is made. But 8 to 9 is scratched out, replaced by 9 to 8. With the double-arrowed arc and the lines through the 12s in the denominator, it is difficult to make any inferences about the reasoning for the final result.

The student samples seen above are examples of work in which the students found common denominators. Many students took this approach, and the fact that the students used this strategy is not surprising, considering that students have spent several years finding the common denominator while working with fractions.

Figure 13 is an example of a more algebraic approach. This student represented the situation with an equation that set the ratio of second graders on the left equal the ratio of sixth graders on the right, and solved for x. There is much information that is not shown in this solution, and this solution could be the basis for a discussion to justify both the approach and solution.

From an algebraic perspective, the relationship can be written as $\frac{2}{3}x = \frac{3}{4}y$, where each side represents the number of paired students, and $x$ is the total number of second grade and $y$ the total number of sixth grade students.

Showing the ratio of second to sixth grade students actually requires one more step than was seen in figure 13. Figure 14 shows the calculations involved. Notice that the ratio 9:8 allows for varying numbers of students in the second
and sixth grades (e.g., \( \frac{9}{16}, \frac{18}{24}, \frac{27}{24} \), or any \( \frac{9n}{8n} \) where \( n \) is a natural number).

**Discussion**

This task offers an opportunity for students to choose among several different approaches, and during class investigations to discuss and compare the features of each strategy. The task is a non-standard proportional reasoning task, which qualifies as *doing mathematics* (Stein, Smith, Henningson, & Silver, 2000). The task’s purpose is to lead to mathematical understanding through the application and connection of multiple representations, including visual, graphic, numeric, and algebraic approaches. When some students obtain a ratio of 8:9 and others get 9:8, this is an opening to ask them how they had approached the task and discuss why some students got 8:9 and some 9:8, and what this means for the number of students in the classes and the pairs of students. At some point in the discussion, students should be pressed to consider the following:

- If you used different numbers, will you still get the same relationship?
- What if we started with another pair of fractions, would we expect the same result?

Opportunities can be provided for students to reflect on the meaning of the fact that a common denominator approach results in the ratio 8:9, while the common numerator yields 9:8. To determine whether the common wrong answer of 8:9 is coincidentally the reciprocal of the correct answer, use \( \frac{a}{b} \) and \( \frac{c}{d} \) as the ratios of paired to total number of the 2nd and 6th graders and solve the problem as shown in Figure 15. What relationships between \( a, b, c, \) and \( d \) make sense in this problem?

The NCTM Curriculum Focal Points include an expectation for students to “extend their work with ratios to develop an understanding of proportionality that they apply to solve single and multistep problems in numerous contexts” (2005, p. 36). This type of flexibility can only result
Looking beyond single answers when students develop a conceptual sense of what it means to reason proportionally by investigating comparisons of quantities as part of their classroom activities. A purpose of this paper is to suggest teachers move away from developing or favoring a single approach to a problem—to recognize that this suggests to students that there is a best or only way to approach these types of patterns. Teachers should guide the lesson in such a manner that the underlying concept emerges by building on students’ ideas. For this reason, it is necessary for teachers to explore the range of ideas that students bring to a proportional reasoning problem.
References


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The Use of Animations in Science Education: The SPIRAL Model

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Abstract

Animations can be used as a tool for the learning of science topics at k12 and University levels. While presenting a step-by-step way of using animations in the classroom, authors also discuss the SPIRAL model developed to better understand how animations can and should be used to enhance science learning.

Introduction

The use of animations with colored clay (or claymations – Harrison & Hummell, 2010) in educational settings is very recent. Starting in 2008, our first workshops of claymations with adults, adolescents and children showed that this technique was simultaneously easy to use and motivational for learners.

As educators, we have used claymations as a learning tool since 2008 (Bossler, 2010). In the first four years we have used this technique with k12 students and teachers and higher education students and teachers, usually in workshops with homogeneous groups (namely k12 students, k12 teachers or higher education students) aiming both to present the technique to the participants and show a step-by-step model for its use in the classroom (Bossler, 2009).

Previous work with claymations

In 2013 we have gathered all the videos developed in the first four years of our experience with animation as a technique for the knowledge construction and reconstruction of science topics (for instance, bean germination, changing water states, or sunflower behavior in the fields). We have also revised our step-by-step procedure and demonstrated how learning occurs in the animation workshops (Bossler & Caldeira, 2013; Caldeira & Bossler, 2013): as a knowledge (re)construction process.

The animation workshops had five different steps:
1. Participants are introduced to a brief history of animation and the researchers pointed out the power of stories to motivate and induce learning (e.g. Bateson, 1996);

2. In small groups, participants choose the event (usually a scientific one) they will animate. The group develops a script and start to build with clay scenarios and dummies. In this step, the workshop facilitators must be very attentive to the dialogues participants establish in the different groups. In these dialogues, when participants are materializing their story, i.e. when they’re trying to turn concrete (through scenarios and dummies) concepts that usually are abstracts, errors and knowledge gaps pop-up, even when the concepts required by the animation are well known to participants (for instance, as bean germination to Biology undergraduates);

3. Photo shooting – in this step participants shoot the story they choose to animate, making small changes in scenarios and dummies between shots. In this step, the workshop facilitators must be very attentive to the shooting sequence, as incomplete sequences, jumps in sequences or bad sequences are good indicators of knowledge flaws (for instance, rain appears after or before the flowering of grains?);

4. Animation edition – in a software as Microsoft Movie Maker© or similar participants select and upload the photos they have shot in order to build the animation;

5. Sharing the animations with all participants.

The cornerstone of our approach is the questioning participants of our workshops face each time they show wrong knowledge (researchers’ inquiry interventions), ill-structured knowledge or absence of knowledge. We use Paulo Freire’s (2001) questioning technique as a way to participants understand what they know, what they do not know and what they think they know but actually they do not. Workshop facilitators play a major role in the process, as their questionings and comments trigger in participants the need to (re)construct their knowledge.

**The SPIRAL model**

The SPIRAL model presents the step-by-step procedure for the use of animations in the classroom and explains how participants’ knowledge (re)construction occurs.

Differently from other authors that use animation as an instruction and learning tool (Hoban, McDonald, Ferry & Hoban, 2012 - the 5 Rs Model), we propose the use of animation only as a learning tool: a way to better understand how participants (re)construct their knowledge in the workshop. Animations in the SPIRAL model are assumed as an active learning activity (Ferrer & Garcia-Barrera, 2014) because learning occurs when new information is incorporated to old one and is organized into mental representations that are integrated with the previously existing knowledge – knowledge
(re)construction. Animations are an active learning activity because students are engaged in meaningful learning activities and they reflect about what they are doing (Prince, 2004).

SPIRAL stands for the main steps of our revised step-by-step procedure, aiming to materialized participants knowledge (re)construction: Script, Scenarios and Dummies conception; Photo shooting definition; Inquiry intervention; Knowledge Reconstruction; Animation development and; Learning results. The main difference for the last step-by-step procedure is the design of the concept map (Novak & Cañas, 2006) of the scientific event participants chose to animate in the two first steps of the model (initial concept map) and the concept map of the same scientific event in the final step of the model (final concept map).

Research objectives

The main research objective is to test the SPIRAL model previously described. In addition, a secondary goal is to understand, through a comparative analysis of initial and final concept maps, how participants (re)construct knowledge.

Methodology

One group of 14 Biology students have participate in one Workshop on Claymation and Science Education. The structure of the Workshop is aligned with the SPIRAL model, with the following steps:

1. How to build concept maps;
2. History of animation and impact of stories and narratives on learning;
3. Definition (by researchers) of the scientific event participants must animate (bean germination);
4. Design of initial concept map (individually);
5. Scenarios and dummies building;
6. Photo shooting;
7. Inquiry interventions (simultaneously with steps 5 and 6);
8. Design of final concept map (individually).

The analysis of results will focus on the evidences of learning that may occur on 4 to 8 steps and on a systematic comparison between the initial and the final concept maps.
Concept map of bean germination

The concept map of bean germination comprises three different groups of concepts (Figure 1):

i. Previous processes and structures related to bean germination (flower, fecundation…),
ii. External conditions needed to bean germination (humidity, temperature, oxygen and mineral salts) and,
iii. Anatomical and structural changes in the bean during the germination process (radicle, root, cotyledons…).

A good concept map must present in the right order those three groups of concepts.

Figure 1. A simplified concept map of “Bean Germination”

Results analysis and discussion

Initial concept map: In the initial concept maps all students represented the environmental conditions needed to bean germination (only one represented all the
biological conditions involved in the bean germination), but only three of the 14 students designed the previous processes and structures related to bean germination, and seven represented the anatomical and structural changes of the bean during the germination process.

**Inquiry:** As in previous workshops the animators questioned students regarding their knowledge flaws, cognitive gaps or errors when representing bean structures, environmental conditions needed to bean germination or anatomical and structural changes occurring during bean germination.

Table 1 shows several erroneous, incomplete or flaw knowledge that students made when they are building dummies and scenarios for the animation. The table links the evidences those errors, gaps and flaws to their respective meaning.

<table>
<thead>
<tr>
<th>Evidence in building the model</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hilo (cicatrice) and micropyle (first as radicle and after as root) are not represented in the bean</td>
<td>Students do not know the existence of those structures</td>
</tr>
<tr>
<td>They do not know hilo and micropyle functions</td>
<td>When students are called to account for their presence they can not relate to plants’ development</td>
</tr>
<tr>
<td>Cotyledons do not change in presence of water</td>
<td>Students do not understand the fundamental role of water in the bean germination process</td>
</tr>
<tr>
<td>Cotyledons are not differentiated from the first leaves</td>
<td>Students do not know the first function of cotyledons (food reserve)</td>
</tr>
<tr>
<td>Students do not differentiate put the bean on cotton or on soil</td>
<td>Students do not know the cotyledons function in the development of the young plant and the role of the radicle in the initial scenes</td>
</tr>
<tr>
<td>The cotyledons do not change even after the plant has grown</td>
<td>Students do not recognize cotyledons as food reserve and the changes on them as they are used as food reserve</td>
</tr>
</tbody>
</table>

*Table 1.* Evidences used in the inquiry step of the model

Researchers detected all those evidences at the first steps of the workshop (script and building of models and scenarios). And, as those evidences were collected, students were confronted to their erroneous, incomplete or flaw knowledge through reflexive questionings (Freire, 2001), as described below:
When students were choosing the germination locus (cotton or soil) one of the researchers saw that students didn’t expressed their knowledge regarding the implications of the germination occurring on cotton or directly on soil. So she asked: “But what’s the difference to the bean grow on cotton or on soil?”. The students’ answers and facial expressions revealed that they didn’t understood the radicle function (soil fixation), as they did not differentiate between root and radicle (the first one has two functions: soil fixation and nutrients absorption).

Choose cotton or soil as scenario for the germination has consequences to the plot (script). On cotton, when the resources of cotyledons are depleted, the young plant will die if it is not transferred to soil (full of nutrients). Students must to consider those implications when they are writing the script.

In the beginning, root and radicle have the same function: the difference was solely aesthetic. Then the researcher asked: “If the germination occurs on the cotton, if the bean is not placed on soil what happens?”. And it was from this question that the students began to call into question their knowledge regarding the structures and functions of the different elements involved in bean germination.

**Final concept map:** In the final concept maps all students (12 participants) represented the environmental conditions needed to bean germination (but usually including more biological conditions involved in the bean germination), six of the 12 students designed the previous processes and structures related to bean germination, and six represented the anatomical and structural changes of the bean during the germination process (those concept maps include more structure changes than the initial ones).

The inquiry interventions (researchers’ questioning) allow students to better understand what they know, what they do not know and what they think they know but actually they do not, confirming previous research results (Bossler & Caldeira, 2013; Caldeira & Bossler, 2013). But those inquiry interventions must be based on solid knowledge in order to identify students’ erroneous, incomplete or flaw knowledge and to help them to (re)construct their knowledge as active learners.

The initial concept maps are full of erroneous, incomplete and flaw knowledge and the final concept maps are more accurate and they better represent the scientific event participants animated (bean germination). The inquiry interventions resulted on a more completed knowledge regarding previous processes and structures needed to the bean germination and the anatomical and structural changes occurring during the germination process.

A comparative analysis of initial and final concept maps revealed that knowledge (re)construction paths undergone by students are mostly related to the answers students reach when questioned by researchers.
Therefore, claymations are an effective learning tool and the SPIRAL model has proved to be a robust learning model on STEM Education. However, some guidelines must be drawn to an effective use of the SPIRAL model on classroom:

i. Educators and teachers must have a complete knowledge of the event / process students must animate, that knowledge is essential in order to them detect students’ erroneous, fragmented, incomplete or flaw knowledge,

ii. Educators and teachers must be very attentive of what students discuss and decide in each group, in order to detect students’ erroneous, fragmented, incomplete or flaw knowledge. Therefore each educator / teacher should only work simultaneously with 3 to 4 student groups,

iii. Educators and teachers should refrain to give the “right” answers to their students or destroy their “wrong” concepts. The SPIRAL model is an active learning model: students are considered as active subjects in their learning processes - recognizing their errors or incomplete knowledge, searching for accurate knowledge and incorporating it in their knowledge structure are elements for an active learning process. Students should use print and digital materials to build their scripts, and models and scenarios they will use in their animations (however, educators and teachers must be aware that some didactical illustrations are erroneous or give incomplete or fragmented information about the process they intent to illustrate),

iv. Educators and teachers must be aware that concept maps are an effective learning tool for active learning processes.

References


Evidence-Based School Decision Making—A Case Study of A Four-Year State College

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Abstract

We share the practices of a four-year state college in evidence-based decision making aimed at enhancing student performance, retention, and graduation. To ensure the quality of our existing academic programs, we evaluate and revise degree offerings through a rigorous, data-driven assessment process. Strategies that have been employed include: 1) the development of an innovative core curriculum that prioritizes student engagement, critical thinking, and communication; 2) the collection of survey data to determine student and community needs; 3) the systematic assessment of the impact of various pedagogical approaches on student learning; and 4) the development of standardized rubrics, data collection and systematic analysis of data to drive curricular change. Through the engagement of a robust Office of Institutional Research, members of the campus community are provided timely and relevant information about the impact of various campus activities to ensure that all members of the institution are able to identify and address performance gaps among students based on a host of demographic and program variables. Our fundamental goal is to provide the requisite data to campus constituents such that they are able to experimentally assess various hypotheses about student performance and identify potential solutions to enhance overall student success on campus.

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Evidence-Based School Decision Making—A Case Study of A Four-Year State College

Introduction

In recent years, evidence-based decision making has received increased interest and attention from educational researchers, scholars, and administrators (Marsh, Pane, & Hamilton, 2006; Turner & Coburn, 2012). In an era of increased calls for institutional improvement and accountability at the state and federal level, the acceptance of the notion that data are critical to educational reform is gaining popularity (Marsh, 2012; Weiss, 2012). For example, using information about student learning and progress to inform school and classroom practices is now widely recognized as an important component of curricular improvement (e.g. Earl & Katz, 2006) and there have been numerous calls for the use of data to increase individual and institutional accountability (Bernhardt, 2004; Campbell & Levin, 2009; Carlson, Borman, & Robinson, 2011; Marsh, 2012; Marsh, Pane, & Hamilton, 2006).

While the call for data-driven decision making has been on the rise in recent years, the actual use of data to drive institutional change in higher education has not kept pace (Ewell, 2013; Turner & Coburn, 2012). As a result, much of the literature on data-based decision making in the university setting has resulted in practical guidance to Institutional Researchers to assist them in implementing the needed infrastructure to initiate data-driven change on their home campuses (e.g. Knight, 2003; McLaughlin & McLaughlin, 2007). We share the initiatives and practices of a four-year state college in implementing an evidence-based decision making model to enhance student performance, retention, and completion rates.

Context of the Study

As the first and only four-year institution in the Nevada System of Higher Education (NSHE), Nevada State College (NSC) places a special emphasis on the advancement of a diverse and largely under-served student population. Located on a developing 500-acre campus in the foothills of Henderson, Nevada, the College was established in 2002 as a new tier in the state system positioned between the research universities and the two-year colleges. In this role, the College emphasizes high-quality instruction, exemplary service, engaging learning experiences, and innovation as a means to more efficient, effective outcomes in all corners of the campus.

Enrollment at the College has increased rapidly, climbing from 177 students at its inception in 2002 to more than 3,500 students in the fall of 2014. A highly diverse student body, 43.9% of the students are White, 11.6% are Black or African American, 23.2% are Hispanic, 10.5% are Asian, 4.0% report two or more races, 1.7% are Pacific Islander, and 0.4% Alaskans and native Indians. Of these students, 76.4% are female, 55.9% are at least 25 years old, and 63.2% attend part-time.

As a member of the Nevada System of Higher Education, NSC operates as a critical access point to a baccalaureate degree and aims to open the door to career success and enhanced quality of life for students who otherwise might face limited opportunities for success in higher education by improving the retention, persistence and graduation rates of our students. The College aspires to improve the outcomes of all students, particularly those who come from first-generation, non-traditional, and other under-represented backgrounds. Our success in this regard plays an integral role in the future economic and social health of a state burdened by one of the lowest proportions of college graduates in the nation. The graduates of Nevada State College are expected to ease this burden and contribute to a more diverse workforce and diversified
To aid us in this endeavor, we have firmly established a culture rooted in evidence-based decision making. As part of our strategic planning efforts, the achievement of this goal begins with opportunity – the supportive services and inclusive practices that open doors to a diverse and largely under-served student population. This opportunity, in turn, creates a path to educational enrichment – the personal and professional growth shaped by learning experiences that challenge and inspire students to achieve their potential. This investment in our students culminates with a far-reaching impact, as our alumni realize post-graduate success, enjoy an improved quality of life, and act as catalysts for social, civic and economic progress in the community.

**Conceptual Framework**

The model of decision making at the college is grounded in a conceptual framework, that has evolved over time and has been informed by prior studies (e.g., Mandinach, Honey, & Light, 2006; Marsh et al., 2006) and research by faculty members within the institution (e.g., Kebede & Scinta, 2012; Kuniyuki & Sharp, 2011; Wong, 2013). This conceptual model consists of several interrelated components that involve the systematic collection of raw data, the analysis of that data into interpretable information by institutional researchers, and the dissemination of that information to campus stakeholders (see Figure 1). In this process, the information becomes actionable knowledge (Marsh et al., 2006) that informs campus decision making including goal setting, benchmarking, and the evaluation of a host of campus processes and initiatives. As a campus, we have invested in a host of technological and statistical tools (e.g., Tableau dashboards, spreadsheets, SPSS, HLM, and Nvivo) to make our data more visual, accessible and interpretable to a broader audience. Our evidence-based decision making is cyclical in nature, involves broad-scale collaboration among the campus stakeholders, and regularly begs more questions than answers.

![Figure 1: Conceptual Framework of Evidence-Based Decision Making at Nevada State College](image-url)
The model is rooted in the campus mission, core themes, goals, and strategies. Driven by our mission, core themes, goals, and strategies, the institution collects a host of data including input data (e.g., elements from our campus learning management system and student information system), processed data (e.g., financial operations, quality of instruction, advising), outcomes data (course completion, retention, graduation), and student, faculty, and employer satisfaction data to assess institutional effectiveness. For example, National Survey of Student Engagement (NSSE) data have been used to inform a host of campus activities from faculty development to strategic planning and resource allocation. Central to this model is a robust and proactive Office of Institutional Research that collects, analyzes and disseminates high quality data for the internal and external community and is central to campus decision making.

Initiatives and Practices
To ensure the quality of our existing academic programs, the college evaluates degree offerings through a rigorous, data-driven assessment process. Strategies that have been employed include: 1) the development of an innovative core curriculum that prioritizes student engagement, critical thinking, and communication; 2) the collection of survey data to determine student and community need; 3) the systematic assessment of the impact of various pedagogical approaches on student learning; and 4) the development of standardized rubrics, and assessment procedures to drive curricular change. Through the engagement of a robust Office of Institutional Research, members of the campus community are provided timely and relevant information about the impact of relevant various campus activities to ensure that all members of the institution are able to identify and address performance gaps among students based on a host of demographic and program variables. Our fundamental goal is to provide the requisite data to campus constituents such that they are able to experimentally assess various hypotheses about student performance and identify potential solutions to enhance student success.

Outcomes-Based Core Curriculum
At Nevada Stage College, the core curriculum has been designed to deliver broader campus-wide learning outcomes that provide an overarching structure for individual course content. The aim of the core curriculum is to provide curricular coherence for our students and prepare them to become effective communicators, critical thinkers, and socially responsible citizens.

Core Curriculum Outcomes in Syllabi
To ensure effective delivery of the core curriculum, the institution has established an assessment program that identifies the three multi-level learning outcomes students are expected to achieve. These outcomes are communication, critical thinking, and effective citizenship. Each of the outcomes has 4 levels and each of the levels are operationally defined and assessable. Individual course syllabi state which learning outcomes will be assessed within a given course and align them with specific assignments.

Following example shows a sample from a syllabus that outlines outcome levels associated with corresponding course objective and the associated assessment.
<table>
<thead>
<tr>
<th>NSC’s outcomes</th>
<th>Level</th>
<th>Course Objectives</th>
<th>Assessments and Key Performances</th>
</tr>
</thead>
<tbody>
<tr>
<td>Develop communication abilities</td>
<td>2, 3</td>
<td>Construct a persuasive, coherent essay that demonstrates your understanding of course concepts.</td>
<td>Gender observation paper, product analysis.</td>
</tr>
<tr>
<td>Develop critical thinking abilities</td>
<td>3</td>
<td>Demonstrate how the products we buy and the images we see reflect ideas about gender.</td>
<td>Product analysis.</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>Explain gender as something we do and use this knowledge to recognize examples of gender performance in your everyday life.</td>
<td>Gender observation paper.</td>
</tr>
</tbody>
</table>

**Key Performance Assessment and Treatment of Student Preparedness**

Core curriculum courses at the institution offer Key Performance assignments that deliver levels of the core curriculum that best align with the course objectives and content delivery. For example, if an instructor identifies that a course objective of constructing a persuasive, coherent essay demonstrating the understanding of course concepts aligns well with communications levels 2 and 3, the mapping is provided to the students with an associated Key Performance assignment (e.g. an observation paper). A database maintained at the IR office tracks the delivery of all core curriculum outcomes by examining the mapping of outcomes aligned with their Key Performance assessments. This mapping is made available to the departments offering the courses to allow the faculty as a whole to reflect on the intended learning outcomes and ensure that the curriculum provides students with adequate opportunities to develop their skills related to each of the learning outcomes. Periodically, NSC conducts extensive core-curriculum outcomes reviews to re-examine the core curriculum as a whole.

Directly tied to the ability of students to achieve the broader core curriculum learning outcomes is the overall preparedness of the entering student body. There is a growing concern among the higher education community about the lack of preparedness for college level work when students enter postsecondary institutions (Greene & Forster, 2003). As a result, the expansion of remedial coursework in reading, writing, and mathematics has expanded in recent years (Bettinger & Long, 2009). As an access institution, Nevada State has a large proportion of students who are in need of remedial coursework prior to enrolling in college-level courses (Institutional Research Report, 2014a).

Although remedial education programs have been widely used to address academic deficiencies in undergraduates, less is known about their effectiveness on subsequent student performance and outcomes in college (Bettinger & Long, 2009). This has elicited an ongoing debate about the effectiveness of such remedial programs and their overall impact on educational quality (Brothen & Wambach, 2004; McMillan et al., 1997; Mills, 1998). Some studies suggest that remedial coursework has a positive impact on student retention (Bettinger & Long, 2005, 2009) and mastery of educational material (Bahr, 2008; Southard & Clay 2004). Other studies have found that students enrolled in remedial coursework perform less favorably than their peers (Curtis, 2002; Illich et al., 2004; Worley, 2003). As per Complete College America, students
who enroll in remediation at 4-year colleges are about 20.6 percent less likely to graduate within 6 years compared to students who do not take remedial courses (Complete College America, 2012). Still others present mixed or inconclusive findings regarding the overall effectiveness of remediation (Gray-Barnett, 2001; Seybert & Soltz, 1992).

Given the importance of college preparedness on overall student success, our institution has employed our decision making model to make a host of decisions about remedial coursework on campus. Drawing on multi-year student enrollment and student cohort data, we have employed various enhanced predictive models and the examination of alternative models, including multiple regression, logistic regression, and regression discontinuity design (RDD), to examine the predictive power of high school GPA, SAT and ACT scores, and math placement exams (Accuplacer) on college math performance, one-year retention, and six-year graduation, and the effect of current placement on student math performance (Institutional Research Report, 2014b; Wong, 2013). Built upon our own in-depth data analyses, as well established best practices (Long Beach City College, 2013), we have revised placement policies and procedures, completely redesigned curricula and delivery models, and developed precise and timely assessment procedures to provide ongoing feedback to students and faculty. Each of these efforts has resulted in a demonstrable impact on overall student performance and retention. As is often the case with evidence-based decision making, our work in this area has begged additional questions and our redesign efforts are ongoing.

Student Engagement

The importance of the first year of college on overall student success has been widely recognized (Bers & Younger, 2014; Keup & Kilgo, 2014). The literature has clearly supported the notion that detailed information about first-year student success, particularly student engagement, helps inform a host of decisions about initiatives and practices to support incoming students (Tukibayeva & Gonyea, 2014; Kuh, 2001, 2003). As the most widely utilized measure of student engagement, the National Survey of Student Engagement (NSSE), broadly defines student engagement as the amount of time and effort students devote to their studies and other educationally purposeful activities.

NSC has been actively participating in the National Survey of Student Engagement (NSSE) and the Beginning College Survey of Student Engagement (BCSSE) since 2005. Once this data is collected, student engagement patterns are analyzed and the data is utilized to inform faculty development initiatives. Because NSSE and BCSSE focus on student learning and engagement and effective instructional practices, the data and our own analysis provides evidence-based improvement initiatives for enhancing instructional practices and enriching student experiences. Our finding have impacted institutional self-studies, institutional research initiatives, retention initiatives, and core curriculum reform, among others. For example, based on the results of NSSE and BCSSE, significant changes have been initiated in freshman orientation, advising practices, and first-year experience (FYE) programs. In addition, we have developed mechanisms that enable advisors to collect feedback from students and provide that information to department chairs, deans, admission and records, and other stakeholders, which allows them to make relevant decisions based on the information provided.

Discussion and Conclusions

The examples provided in this paper are but a few of the initiatives on our campus that have benefitted from a deep commitment to evidence-based decision making. Through the
engagement of a robust Office of Institutional Research, members of the campus community have been provided timely and relevant information about the impact of various campus activities to ensure that all members of the institution are able to identify and address performance gaps among students. By providing data to campus constituent, we have been able to allow individuals on campus to experimentally assess various hypotheses about student performance and identify potential solutions to enhance overall student success on campus. Our work in this regard is always evolving and is aimed at helping to close equity gaps in student performance and significantly increase our retention and completion rates.
References


Possible Factors Related to College Students’ Performance, Retention, and Graduation

Erika Beck  Qingmin Shi  Sandip Thanki
(Nevada State College)

Abstract

There is a well-established literature documenting that Caucasian students have historically significantly outperformed their African American and Hispanic peers on a host of measures throughout K-16 schools in the United States. The underlying reasons for this achievement gap are not wholly understood, but place the U.S. at a significant disadvantage with regard to global competitiveness and the ability to propagate a robust democratic society. In higher education, this achievement gap is clearly visible in retention and graduation rates, as well as a host of other measures of student success. Therefore, it is imperative for researchers and decision makers not only to understand the variables that impact student performance, but also to understand how these factors vary by demographic characteristics.

This study closely examines achievement gaps and the possible factors related to retention and graduation rates for White, Hispanic, African American, and Asian students. Investigating the performance of 1054 freshman from 2005, 2006, 2007, and 2008 cohorts, this study identified the previously established achievement gap among students from different ethnicities and set out to investigate additional factors related to these gaps in performance. Utilizing logistic regression, the study found that among other factors, incoming high school GPA and unit progress are significantly related to student performance, retention, and graduation rates, but the patterns underlying that relationship varied for different racial and ethnic groups.

Keywords: College Students, Performance, Retention, Graduation

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Possible Factors Related to College Students’ Performance, Retention, and Graduation

Introduction

There is a well-established literature documenting that Caucasian students have historically significantly outperformed their African American and Hispanic peers throughout K-12 schools in the United States (Aud, Fox, & KewalRamani, 2010; Gregory, Skiba & Noguera, 2010; Gorey, 2009; Kao & Thompson, 2003; Reardon & Galindo, 2009). The achievement gap is of significant concern to educators and policy makers alike as it threatens the U.S. competitiveness in the emerging global economy (Carnegie Forum on Education and the Economy, 1986) and hampers the ability to maintain a strong democratic and equitable society (Sleeter, 2008). These gaps have fluctuated over time, but have widened in recent years. As noted by Gorey (2009), a large achievement gap between White and Black students from elementary, through junior to high school was clearly evident in the 1960s. The differences ranged from a half a standard deviation for elementary school to more than a full standard deviation by the 12th grade. Although there were some indications that the gaps narrowed in the 1970s and 1980s (Lee, 2002), that progress has since slowed or even widened (Gorey, 2009; Lee, 2002).

Similar achievement gaps have been observed among those college-bound students who take the Scholastic Aptitude Test (SAT), and American College Testing (ACT) (ACT, 2012; Kao & Thompson, 2003; Lee, 2002). For example, College Board (2013) reports that SAT critical reading scores are highest among White (527) and lowest among Black (431) college-bound seniors; SAT mathematics scores are highest among Asian students (597, White, 534) and lowest among Black students (429); SAT writing scores are highest among Asian students (527, White, 515) and lowest among Black students (418). The academic achievement gaps and educational attainment among K-12 students from different racial and ethnic groups may account for the disparities of high school completion, and immediate college enrollment (Kena et al., 2014). Data from National Center for Education Statistics (NCES) indicate that high school completion, defined as those who graduated from high school with a diploma or through equivalency programs also reflect achievement gaps. These attainment rates are highest for White (85%) and Asian students (93%) and lowest for Black (68%) and Hispanic students (76%) (Kena et al., 2014). Although there were no measurable differences among the rates for Whites, Blacks, and Hispanics, in 2012, enrollment in college upon completion of high school likewise reflects some performance disparities with Asian (84%) students enrolling at the highest rates followed by Hispanic (69%), White (67%) and Black (62%) (Kena et al., 2014).

Student retention and completion at postsecondary institutions at the aggregate level has been a challenging and problematic issue in U.S. (Swail, 2004). For example, according to the NCES 2014 report, only 79 percent of the college students who enrolled as first-time, full-time students at 4-year degree-granting institutions in 2011 returned the following fall. According to the same report, only 59 percent of first-time, full-time students who began seeking a bachelor’s degree at a 4-year institution in the fall 2006 completed that degree within six years (Kena et al., 2014).

Although ample attention has been paid to the achievement gaps for students from different ethnicities at K-12 levels, the achievement gaps among students from different ethnicities at college level, while certainly present, are less evident in the empirical studies in the literature. Despite a robust literature aimed at addressing college retention and completion rates, this literature typically examines these rates at the aggregate level without disaggregating
performance based on demographic variables (Bensimon, 2005). This practice will mask performance gaps that underlie the numbers and there is a need for a closer examination of these metrics for first generation and underrepresented minority students (DeFreitas & Rinn, 2013; Wood & Ireland, 2014). As the U.S. pursues the completion agenda, understanding and closing these gaps in performance will become essential for researchers and scholars, policy makers, and higher education leadership more broadly. Therefore, it is imperative for researchers and decision makers not only to identify and understand the potential achievement gaps that may exist, but to closely examine the potential causes of these gaps in performance such that they may be addressed on individual college campuses. This paper is aimed at contributing to the broader knowledge base regarding college performance, but also at inspiring college leadership and policy makers to more closely examine the patterns of student performance at their home campuses such that we may begin to narrow these gaps.

Drawing on 1054 freshman cohort data from a four-year state college, this study closely examines the potential gaps in performance, retention, and graduation for students from different ethnicities and explores the possible factors related to college students’ performance, retention, and graduation for White, Black or African American, Hispanic, and Asian students. Specifically, this study addresses two research questions: Are there gaps in performance, retention, and graduation for students from different ethnicities? If the gaps do exist, what factors might be impacting differences in performance, retention, and graduation for students from different ethnicities?

**Theoretical Framework**

There is a large body of literature investigating student retention and persistence in higher education. Researchers have identified a variety of factors related to retention and success in college, including academic preparedness, campus climate, commitment to educational goals and institution, social and academic integration and engagement, in addition to financial aid, and family support (Swail, Redd, & Perna, 2003). A number of models and conceptual frameworks have emerged from this literature, but the most widely cited are Tinto’s (1975) student integration model, Bean’s (1980, 1982) synthetic model, and Astin’s (1975) model of student involvement.

From a sociological perspective, Tinto’s (1975, 1987, 2007) student integration model suggests that student attrition is largely related to academic and social integration on campus. Tinto (1975) argues that the students who are able to socially and academically integrate into campus learning and social community are more likely to commit to their goals. Tinto’s model suggests that institutions should focus on increasing the level of student academic and social integration in the institution which should lead to the student’s commitment to the institution and to the goal of graduation.

From psychological perspectives, Bean’s synthetic model (1980, 1982) offers an integrated multi-level perspective which incorporates individual characteristics such as socioeconomic status, high school experiences, incoming academic performance, and distance from home into account in the causes of attrition. Bean’s model likewise emphasizes the importance of the organizational factors in student success, including institutional quality, advising, and staff-faculty interaction and their impact on retention, as student satisfaction, and. While both Tinto (1975) and Bean (1980) are widely cited in the retention literature, both models focus on why students leave college, rather than why student stay and succeed in college.
Astin’s (1984) model of student involvement places a greater emphasis on student engagement and describes how students develop during the college experience. Defining student involvement, Astin (1999) refers to “the amount of physical and psychological energy that the student devotes to the academic experience” (p. 518). Examples include time spent on academic work and other educational activities, and personal development. According to this theory, the more involved a student is in the activities of a college, the greater their investment and more the quantity or quality of their physical and psychological energy investment will be. Following this assumption, the more involvement, the greater gains students will have in academic learning and personal development. Therefore, from the standpoints of policy and practice, any educational policy and practice directly increasing student involvement will be more effective in retaining and graduating students.

Similar to Astin’s orientation, Kuh’s (2001, 2003a) framework emphasizes the role of student engagement in student success. The National Survey of Student Engagement (NSSE, 2014) defines student engagement from two critical features of collegiate quality: one is the amount of time and effort students devote to their studies and other educationally purposeful activities; and the other one is the extent to which the institution intentionally creates curriculum and other learning opportunities and provides resources and organizes the curriculum and a variety of purposefully educational activities to engage students to participate in these activities that have been linked to student learning. From this perspective, engagement is the key for student retention and success.

Recently, Swail (2004) proposed a Geometric Model of Student Persistence and Achievement, in which cognitive factors, institutional factors, and social factors play an interactive role in providing a foundation for student success. This model, focusing on the cognitive and social attributes that students bring to campus, and institutional role in the student experience, allows in-depth understandings of the internal and external factors related to student retention and success in college.

The aforementioned conceptual and theoretical frameworks attempt to explain the causes of student attrition and success from various perspectives. They consider the roles of a variety of factors play in college student retention and graduation, from student individual background variables, to institutional factors, and other broad factors. Each of these models serve as a basis for a deeper examination of the various factors that impact retention and graduation and this study explores the factors closely related to performance, retention, and graduation for students from different ethnicities and address two research questions of this study stated earlier in the paper.

Methods

Context and Participants

This study examines data from undergraduate students at a comprehensive four-year state college with a deep commitment to fostering educational opportunity for a largely underrepresented, first generation students. The fastest growing institution in state, the campus has expanded from 177 students when it opened in 2002 to more than 3500 in fall 2014. A highly diverse campus, 76 percent of the student body is female, 24 percent is an ethnic/racial minority, and 50 percent are first-generation college going students. Based on the recent enrollment records by fall 2014, student body in the institution mainly includes 43.9% White students, 11.6% Black or African American students, 23.2% Hispanics students, 10.5% Asian students, and 4.0% two or more racial students. Of these students, 75.3% are females, and 24.7% are
males; 45.4% are under 25 years old, and 54.6% are above 25 years old; 36% enrolled full-time and 64% are part-time students.

The data sources for this study are multiple-year enrollment records. The participants of this study were a 1054 freshman cohort, which consists of first-time degree-seeking students of any age who started their postsecondary studies in the fall semesters of 2005, 2006, 2007 and 2008. We examined the graduation rate for those who graduated within six years because it is a more realistic metric for this institution in which the majority of students attend part-time, work more than half-time off of campus, and are largely placed into developmental math and English coursework.

Of these 1054 students, 593 (56.3%) are White, 219 (20.8%) are Hispanic, 122 (11.6%) are Black or African American, and 120 (11.4%) are Asian. Due to a small proportion of American Indian or Alaskan students (6 students), this study primarily focuses on these four racial groups in the data analysis. Table 1 presents the characteristics of these participants, as well as the coding of the variables for the data analysis.

Table 1

<table>
<thead>
<tr>
<th>Variable Name</th>
<th>Coding</th>
<th>N</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethnicity</td>
<td>0 = White</td>
<td>593</td>
<td>56.3</td>
</tr>
<tr>
<td></td>
<td>1 = Hispanics of Any Race</td>
<td>219</td>
<td>20.8</td>
</tr>
<tr>
<td></td>
<td>2 = Black or African American</td>
<td>122</td>
<td>11.6</td>
</tr>
<tr>
<td></td>
<td>3 = Asian</td>
<td>120</td>
<td>11.4</td>
</tr>
<tr>
<td>Gender</td>
<td>0 = Female</td>
<td>754</td>
<td>71.5</td>
</tr>
<tr>
<td></td>
<td>1 = Male</td>
<td>300</td>
<td>28.5</td>
</tr>
<tr>
<td>High School GPA</td>
<td>Overall mean = 2.25</td>
<td>1054</td>
<td></td>
</tr>
<tr>
<td></td>
<td>0 = 1.99 or less</td>
<td>5</td>
<td>0.5</td>
</tr>
<tr>
<td></td>
<td>1 = 2.00 - 2.49</td>
<td>154</td>
<td>14.6</td>
</tr>
<tr>
<td></td>
<td>2 = 2.50 - 2.99</td>
<td>277</td>
<td>26.3</td>
</tr>
<tr>
<td></td>
<td>3 = 3.00 - 3.49</td>
<td>235</td>
<td>22.3</td>
</tr>
<tr>
<td></td>
<td>4 = 3.50 or up</td>
<td>101</td>
<td>9.6</td>
</tr>
<tr>
<td>Performance</td>
<td>0 = below C-</td>
<td>519</td>
<td>36.6</td>
</tr>
<tr>
<td></td>
<td>1 = C and above</td>
<td>899</td>
<td>63.4</td>
</tr>
<tr>
<td>Retention</td>
<td>0 = not registered for courses next year</td>
<td>538</td>
<td>51.0</td>
</tr>
<tr>
<td></td>
<td>1 = Registered for courses next year</td>
<td>516</td>
<td>59.0</td>
</tr>
<tr>
<td>Graduation</td>
<td>0 = not graduated within six years</td>
<td>897</td>
<td>85.1</td>
</tr>
<tr>
<td></td>
<td>1 = Graduated within six years</td>
<td>157</td>
<td>14.9</td>
</tr>
</tbody>
</table>

Research Questions and Hypotheses

The current study investigated two research questions. First, do the data indicate gaps in performance, one-year retention, and six-year graduation rates for students from different ethnic and racial backgrounds? Second, if they do indicate such gaps, what factors are related to those differences in performance, retention, and graduation for students from different racial and ethnic backgrounds?

Based on the existing literature, academic achievement is one of the most fundamental predictors for successful transition from high school to college (Lee, 2012; Stearns, Potochnick, Moller, & Southworth, 2010). In an effort to better understand the possible factors (e.g. incoming high school GPA, travel distance to the institution, unit progress) associated with achievement gaps, we assume that all three factors are related to student performance, one-year retention, and
six-year graduation based on prior frameworks about student retention and success in college (Astin, 1984; Bean, 1980; Kuh, 2001; Tinto, 1975).

Variable Construction
The outcome variables of this study are performance, one-year retention, and six-year graduation. Performance was measured as the first semester official GPA (on a 4.0 point scale). One-year retention was coded as 0 = not registered for courses the following fall, 1 = registered courses the following fall; and graduation was coded 0 = not graduated within six years, 1 = graduated within six years.

The independent variables of this study are ethnicity, high school GPA (HSGPA), travel distance to the institution, and unit progress (the credit hours students taking). Among these independent variables, ethnicity was necessarily recoded for the data analysis; 0 = White as the reference group, 1 = Black or African American, 2 = Hispanic, and 3= Asian. Based on official student transcripts, HSGPA was measured on a 4.0 point scale and treated as a continuous variable. Travel distance to the institution and unit progress were measured directly as the miles from home address to the center of institution and total credit hours in progress.

Data Analysis
To address the first research question, a one-way Analysis of Variance (ANOVA) was utilized to examine the performance for students from different ethnicities. Tukey’s HSD Post hoc tests were applied where an overall significant effect was determined. To answer the second research question, a regression analysis was utilized to examine the relationship of student performance with HSGPA, unit progress, and distance to the institution.

Due to the nature of the two categorical dependent variables in this study, we also utilized chi-square analysis with follow-up analyses on the first research question. Due to the nature of the variables, a logistic regression analysis was permissible to answer the second question about the differences of one-year retention and graduation. Pearson and Spearman’s rho correlation were conducted to assess the relationship existing between the predictors and the outcome variables. Afterward, we conducted logistic regression with one-year retention and six-year graduation as the outcome variables, while HSGPA, distance to the institution, and unit progress as the predictors. For all the tests, p value was set at .05 level.

Results

Potential Gaps of Performance, Retention, and Graduation for Students from Different Ethnicities

1. Performance Difference for Students from Different Ethnicities

Table 2 indicates the performance for students from each ethnic group. The results indicate that White students performed the highest ($M = 2.43$), followed by Asian students ($M = 2.30$), Hispanic students ($M = 2.12$), and Black or African American students ($M = 1.56$). The results of the one-way ANOVA indicate that overall, there is significant difference in performance for students from different ethnic groups, $F(3) = 13.92, p < .001$.

Tukey’s HSD follow-up tests indicate that White students significantly outperformed their Hispanic, $p < .05$, and African American peers, $p < .01$. There was no significant difference
between White and Asian students with regard to first semester performance, $p > .05$. Hispanic students significantly outperformed their Black or African American peers, $p < .05$, but performed significantly lower than their White peers, $p < .05$. There was not a significant difference between Hispanic and Asian students in terms of their first semester performance, $p > .05$. Black or African American students performed significantly lower than their White, Hispanic, and Asian peers, $ps < .01$. Asian students significantly outperformed their Black or African American peers, $p < .01$. There was no significant difference between Asian and White, or Asian and Hispanic students in terms of their first semester performance, $ps > .05$.

Table 2

<table>
<thead>
<tr>
<th>ETHN</th>
<th>N</th>
<th>Mean GPA</th>
<th>Standard Deviation</th>
<th>Std. Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>White</td>
<td>593</td>
<td>2.43</td>
<td>1.41</td>
<td>0.06</td>
</tr>
<tr>
<td>Hispanics of Any Race</td>
<td>219</td>
<td>2.12</td>
<td>1.36</td>
<td>0.09</td>
</tr>
<tr>
<td>Black or African American</td>
<td>122</td>
<td>1.56</td>
<td>1.39</td>
<td>0.13</td>
</tr>
<tr>
<td>Asian</td>
<td>120</td>
<td>2.30</td>
<td>1.36</td>
<td>0.12</td>
</tr>
<tr>
<td>Total</td>
<td>1054</td>
<td>2.25</td>
<td>1.42</td>
<td>0.04</td>
</tr>
</tbody>
</table>

The analyses indicated that there were significant differences for students from different ethnic groups in terms of first semester performance. White students performed the highest of the four groups, followed by Asian, Hispanic, and Black or African American students.

2. **One-year Retention Difference for Students from Different Ethnicities**

Table 3 illustrates the proportions of one-year retention for students from each ethnic group. The results of chi-square tests indicate that overall, there was not a significant difference in the proportion of retention for students from different ethnicities, $\chi^2(3) = 5.06, p > .05$.

Table 3

<table>
<thead>
<tr>
<th>ETHN</th>
<th>Retained</th>
<th>Not Retained</th>
<th>Retention Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>White</td>
<td>298 (57.8%)</td>
<td>295 (54.1%)</td>
<td>50.25</td>
</tr>
<tr>
<td>Hispanics of Any Race</td>
<td>100 (19.4%)</td>
<td>119 (21.7%)</td>
<td>45.66</td>
</tr>
<tr>
<td>Black or African American</td>
<td>52 (10.1%)</td>
<td>70 (13.0%)</td>
<td>42.62</td>
</tr>
<tr>
<td>Asian</td>
<td>66 (12.8%)</td>
<td>54 (10.0%)</td>
<td>55.00</td>
</tr>
<tr>
<td>Total</td>
<td>538 (100%)</td>
<td>516 (100%)</td>
<td>51.10</td>
</tr>
</tbody>
</table>

However, because we are interested in the group differences, follow up tests, specifically z tests for paired group proportions, were conducted to examine whether White and non-White students had significant differences in one-year retention. The results indicated a significant proportional difference for White and Black or African American students, $z = 6.3, p < .01$. A significant difference was also evident for White and Hispanic students, $z = 6.7, p < .01$; and White and Asian students, $z = 6.6, p < .01$.

The data indicate that the retention rates for Asian students was the highest, followed by White, Hispanic, and Black or African American students. There were significant differences in retention rates between White and non-White students.
3. Graduation Rate Difference for Students from Different Ethnicities

Table 4 presents the six-year graduation rates for students from each racial and ethnic groups. Overall, there are significant differences in the six-year rates among students from different ethnicities, $\chi^2(3) = 12.69, p < .01$. Follow-up tests for White and Black or African American students revealed a z value of 3.9, $p < .05$, suggesting that White and Black or African American students’ six-year graduation rates are significantly different statistically. Similarly, for White and Hispanic students, there is a statistically significant difference in six-year graduation rates $z = 4.8, p < .01$. There is likewise a statistically significant difference in six-year graduation rates for White and Asian students as well $z = 4.4, p < .01$.

Table 4
Proportions of six-year graduation by ethnicity

<table>
<thead>
<tr>
<th>ETHN</th>
<th>Retained (%)</th>
<th>Not Graduated (%)</th>
<th>Graduation Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>White</td>
<td>108 (68.8%)</td>
<td>485 (54.1%)</td>
<td>18.21</td>
</tr>
<tr>
<td>Hispanics of Any Race</td>
<td>24 (15.3%)</td>
<td>195 (21.7%)</td>
<td>10.96</td>
</tr>
<tr>
<td>Black or African American</td>
<td>10 (6.4%)</td>
<td>112 (13.0%)</td>
<td>8.20</td>
</tr>
<tr>
<td>Asian</td>
<td>15 (9.6%)</td>
<td>105 (10.0%)</td>
<td>12.50</td>
</tr>
<tr>
<td>Total</td>
<td>157 (100%)</td>
<td>897 (100%)</td>
<td>14.20</td>
</tr>
</tbody>
</table>

To conclude, there were significant differences in graduation rates between White and non-White students. White students graduated at a higher rate than the other three racial and ethnic groups. This dataset indicates that there are gaps in performance, one-year retention, and six-year graduation between White and non-White students. The results are consistent with other studies.

Possible Factors Related to Student Performance, Retention, and Graduation

Table 5 illustrates that the results of Pearson and Spearman’s rho correlation analysis indicate that for all students HSGPA and unit progress are significantly related to student performance, one-year retention, and six-year graduation, $ps < .01$, respectively. The relationship between the distance to the institution and performance and six-year graduation were not statistically significant, $ps > .05$. However, the relationship between distance to the institution and one-year retention was negative and statistically significant, $p < .05$.

Table 5
Results of Pearson and Spearman’s rho correlation

<table>
<thead>
<tr>
<th>Variable</th>
<th>Performance</th>
<th>One-Year Retention</th>
<th>Six-Year Graduation</th>
</tr>
</thead>
<tbody>
<tr>
<td>HSGPA</td>
<td>**</td>
<td>**</td>
<td>**</td>
</tr>
<tr>
<td>Unit Progress</td>
<td>**</td>
<td>**</td>
<td>**</td>
</tr>
<tr>
<td>Distance to the Institution</td>
<td>ns</td>
<td>*</td>
<td>ns</td>
</tr>
</tbody>
</table>

Note: * $p < .05$, ** $p < .01$, ns: not significant; -: a negative relationship

In examining the relationship between HSGPA, unit progress, and distance to the institution with performance, one-year retention, and six-year graduation, as shown in Table 6, several different patterns emerged. For White students, only unit progress is significantly related to performance, one-year retention, and six-year graduation, $ps < .01$. For those students, HSGPA is not significantly related to their performance, one-year retention, and six-year graduation, $ps > .05$. For Hispanic students, unit progress is significantly related to performance
and one-year retention, ps < .05, but not to six-year graduation, ps > .05, but HSGPA is not significantly related to their performance, one-year retention, and six-year graduation, ps > .05. However, for Black or African American students, there is not a significant relationship with any of the variables, ps > .05. For Asian students, unit progress is significantly related to one-year retention, p < .01, but not to performance or six-year graduation, ps > .05. HSGPA is not significantly related to performance, retention, and graduation, ps > .05. Interestingly, HSGPA and the distance to the institution, are not significantly related to any of the outcome variables for any group of students, ps > .05.

Table 6
Results of regression for students from different ethnicities

<table>
<thead>
<tr>
<th>Ethnicity</th>
<th>Variable</th>
<th>Performance</th>
<th>One-Year Retention</th>
<th>Graduation</th>
</tr>
</thead>
<tbody>
<tr>
<td>White</td>
<td>HSGPA</td>
<td>ns</td>
<td>ns</td>
<td>ns</td>
</tr>
<tr>
<td></td>
<td>Unit Progress</td>
<td>**</td>
<td>**</td>
<td>**</td>
</tr>
<tr>
<td></td>
<td>Distance to the</td>
<td>ns</td>
<td>ns</td>
<td>ns</td>
</tr>
<tr>
<td>Institution</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hispanics of Any Race</td>
<td>HSGPA</td>
<td>ns</td>
<td>ns</td>
<td>ns</td>
</tr>
<tr>
<td></td>
<td>Unit Progress</td>
<td>**</td>
<td>**</td>
<td>ns</td>
</tr>
<tr>
<td></td>
<td>Distance to the</td>
<td>ns</td>
<td>ns</td>
<td>ns</td>
</tr>
<tr>
<td>Institution</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Black or African American</td>
<td>HSGPA</td>
<td>ns</td>
<td>ns</td>
<td>ns</td>
</tr>
<tr>
<td></td>
<td>Unit Progress</td>
<td>ns</td>
<td>ns</td>
<td>ns</td>
</tr>
<tr>
<td></td>
<td>Distance to the</td>
<td>ns</td>
<td>ns</td>
<td>ns</td>
</tr>
<tr>
<td>Institution</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Asian</td>
<td>HSGPA</td>
<td>ns</td>
<td>ns</td>
<td>ns</td>
</tr>
<tr>
<td></td>
<td>Unit Progress</td>
<td>ns</td>
<td>**</td>
<td>ns</td>
</tr>
<tr>
<td></td>
<td>Distance to the</td>
<td>ns</td>
<td>ns</td>
<td>ns</td>
</tr>
<tr>
<td>Institution</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: * p < .05, ** p < .01, ns: not significant

Discussion and Conclusions

The current study identified clear gaps in performance, one-year retention, and six-year graduation among students from different ethnicities. These gaps were particularly evident between White and non-White students. The current study also indicates that student incoming high school GPA and unit progress are the two most significant factors related to student performance, one-year retention, and six-year graduation when all students are considered as a single sample. Consistent with the prior studies (e.g., ACT, 2010; College Board, 2013; Kena et al., 2014; Ladson-Billings, 2006; Lee, 2012), the findings of this study indicate that there are academic achievement gaps among students from different racial and ethnic groups that persist well into college.

Interestingly, however, the patterns of relationships between the variables under consideration differed for students from different ethnic and racial groups. For example, while high school GPA was significantly related to student performance, retention, and graduation when the cohorts were considered in the aggregate, it was not evident when ethnic and racial groups were examined individually. While also counterintuitive, this finding is likewise inconsistent with a host of studies that have found high school GPA is an important predictor of
college performance (e.g., Betts & Morrell, 1999; Cohn et al., 2004; Sawyer, 2013; Zwick & Sklar, 2005).

The results from the present study are also partially consistent with Bean’s (1980) study with regard to the impact of distance to the institution on retention rates. While the current study found that this distance is a significant factor for one-year retention in the aggregate, when we examine its effects for each racial and ethnic group, none of them is significant. Further study may provide a greater understanding for the impact of distance as it relates to student success for students from different ethnic and racial backgrounds.

Other interesting patterns emerged in the data. For example, unit progress was significantly related to performance, one-year retention, and six-year graduation for White students, but the other variables were not. Unit progress was also significantly related to performance and one-year retention for Hispanic students, but not to six-year graduation. For Asian students, unit progress was significantly related to retention, but not to performance or six-year graduation. Perhaps most surprising, none of the factors under consideration were significantly related to performance, one-year retention, or six-year graduation for Black or African American students. While the sample sizes are small, and thus, the results should be interpreted with caution, the very presence of distinct patterns among students from different ethnic and racial groups warrants further consideration and suggests that retention and completion data should be regularly disaggregated by various demographic variables.

Students from different racial and ethnic groups may have very different trajectories regarding their performance, retention, graduation, and success in college. At individual institutions, there may be a host of other demographic variables that impact student success. Given that the overwhelming majority of the literature on retention and graduation has considered students at the aggregate level, this study suggests that institutions may be well served to develop specific strategies to enhance students learning and retention, and increase graduation rates based on its characteristics of student body and other contextual factors.

Limitations

While the data in this study are intriguing, there are clear limitations. First, the correlational nature of the data prohibit the identification of any causal relationships between the variables and the small sample sizes warrant caution in the interpretation of the findings. In addition, the factors influencing college student performance, one-year retention, and six-year graduation are complex and multi-dimensional (Swail, Redd & Perna, 2003). The current study focuses on a limited number of easily identifiable factors that assist in a broad understanding of the performance of an overall student body. That said, future studies may consider examining a greater number of factors by using hierarchical linear modeling approach and structural equation modeling to discover the more complex relationships between the various factors that impact college student success.
References


Title of the Submission: Museums for Change: Social Justice Art Education in Academic Art Museums

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School of Art
University of Arizona

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Abstract:
Museums have traditionally been accepted as locations for a wealthy and scholarly elite. Today’s museums are aiming to be more inclusive and socially responsive. With this, the museum world is becoming increasingly concerned with issues of “equality, diversity, social justice and human rights” (Nightingale & Sandell, 2012, p. 1). These issues are integral components of social justice art education. Definitions for social justice art education are bountiful. However, many scholars and practitioners would agree with Marit Dewhurst’s (2010) contention that “as long as the process of making art offers participants a way to construct knowledge, critically analyze an idea, and take action in the world, then they are engaged in a process of social justice artmaking” (p. 8). Art Museums that are situated on university or college campuses are particularly well positioned to implement social justice art education programs within their institutions. The fact that these museums function within academic institutions provides them with particular characteristics that render these locations ripe for social justice art education efforts. Some of these attributes include: the encouragement of academic freedom, interdisciplinary practices, active engagement, and social learning.

An example of an academic museum that is making efforts to work with social justice art education is the Corcoran Gallery of Art, which is attached to the Corcoran College of Art and Design. The Corcoran Gallery of Art’s 2013 Summer Teacher Institute, a professional development program for K-12 teachers, was titled Art and Social Justice. Dr. Natasha S. Reid was the keynote speaker for this Summer Teacher Institute and also conducted a full day workshop in the museum. The session focused on artworks in the collection that can be used to examine social justice concerns and imagine and possibly effect change. This led to a social justice-oriented artmaking activity at the end of the workshop.
This presentation will examine the historical underpinnings of social justice efforts in museums. The author will demonstrate why academic art museums are particularly well positioned to work with social justice art education. She will employ the workshop she implemented at the Corcoran Gallery of Art’s 2013 Summer Teacher Institute as an example of social justice art education in an academic museum. The program will be analyzed in relation to the elements of academic museums that make them ideal locations for social justice art education. Suggestions for teachers, higher education faculty members, community educators, and museum educators interested in working with social justice art education in academic art museums will be highlighted.

**Works Cited**


Abstract

Dispositions of middle school teachers in three STEM enrichment programs are compared and contrasted, based on the teachers’ completion of the same survey instruments. Major findings are that teachers from different regions of the US and in programs supported by national versus state or corporate funds have highly similar, positive attitudes toward Science, Technology, Engineering and Mathematics, as well as STEM as a career. These findings can be compared with much less positive dispositions found in preservice teacher education candidates. Implications of these findings for selecting new STEM teachers, as well as factors that may encourage teachers to embrace and remain in STEM teaching, are discussed.

Introduction

Science, Technology, Engineering and Mathematics (STEM) are important to the global competitiveness of the United States (Banning & Folkestad, 2012; Holdren, Lander, & Varmus, 2010). The United States is increasingly reliant on the STEM workforce to maintain leadership in the world economy (Banning & Folkestad, 2012). Improving the STEM workforce is a top priority for policy makers, practitioners and researchers who have goals to recruit and retain more students to work in STEM-related fields (Heilbronner, 2011), compete with the global competition, and most importantly improve STEM literacy for all students (Bybee, 2010). Research has shown that students have their dispositions toward disciplines like mathematics and
science, shaped long before they begin college (George, Stevenson, Thomason, & Beane, 1992; Sadler, Sonnert, Hazari, & Tai, 2012).

For decades, researchers have studied the influence of teachers on their students and have concluded that teacher effectiveness is the most important factor in student achievement (Darling-Hammond, 2000; Hattie, 1987). More recently, researchers have focused on factors that increase student participation in STEM subject areas and have identified highly qualified teachers as a critical element for student success in STEM subjects (Museus, Palmer, Davis, & Maramba, 2011). Even students who are high STEM achieving students recognize that it is critical to have a high quality teacher in the classroom in order to improve STEM education in schools (Christensen, Knezek, & Tyler-Wood, 2014a).

Many programs currently focus on improving the STEM pipeline by preparing both teachers and students in engaging activities aimed at creating and increasing interest in STEM careers. In this paper, three different STEM-related programs and the impact of those programs on the participating teachers will be addressed. All three of these programs employed the same STEM disposition measures. Study 1 included middle school science teachers from the entire state of Hawaii participating in a state and federally funded STEM initiative. Study 2 included middle school teachers from 14 schools across the US participating in a National Science Foundation (NSF) project focused on energy monitoring. Study 3 included teachers whose students were part of a STEM-focused afterschool program located throughout the greater Houston area.

**Instrumentation**

The STEM Semantics Survey was a common measurement instrument in each of the three programs discussed in this paper. The STEM Semantics Survey has been used in many projects across the country over the past few years. It is an instrument used to assess general perceptions of STEM disciplines and careers using Semantic Differential adjective pairs from Osgood’s (1962) evaluation dimension. The STEM Semantics Survey is a 25-item semantic differential instrument based on Osgood’s Evaluative Dimension and containing five scales assessing perceptions of Science, Technology, Engineering, and Mathematics, as well as STEM Careers.

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 participant perceptions of science, math, engineering, technology, and STEM as a career ranged from alpha = .85 to alpha = .95 for recent subjects. These numbers are in the range of "very good" to “excellent” according to guidelines provided by DeVellis (1991).

A measure of how technology tools and support influence teachers’ potential to remain in teaching was also included for the Hawaii project. Teachers were asked to respond to two questions regarding how the availability of new tools and resources with technical support increased the retention of teachers in schools. In addition, teachers indicated whether they are more personally inclined to stay in teaching because of the added tools, resources and technical support provided by programs such as the Hawaii STEM Academy.
Research Studies of STEM Programs

Study 1 involved the Hawaii STEM Academy program currently supported by the Hawaii State Legislature to provide a variety of science and technology middle school program enhancements throughout the state. Data have been collected by the authors from middle school teachers participating in STEM-related professional development activities for the past four years. As shown in Table 1, data were gathered from 201 teachers in spring 2011, 147 teachers in spring 2012, 134 teachers in spring 2013 and 48 teachers in spring 2014 for the Hawaii STEM Academy program. Teachers from middle schools across the State of Hawaii responded each year. The 2014 data gathered represents a smaller although still representative sample size.

As shown in Figure 1, spring 2014 teachers appear to report higher dispositions in four of the five measured STEM indices. Perception of mathematics was consistently lower than the other areas in all four years.

Table 1. Means and Standard Deviations for Technology Integration and STEM Disposition Measures for Hawaii Teachers

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Science Total</td>
<td>201</td>
<td>6.31</td>
<td>.95</td>
<td>147</td>
</tr>
<tr>
<td>Math Total</td>
<td>201</td>
<td>5.36</td>
<td>1.23</td>
<td>146</td>
</tr>
<tr>
<td>Technology Total</td>
<td>196</td>
<td>6.34</td>
<td>.87</td>
<td>146</td>
</tr>
<tr>
<td>Career Total</td>
<td>200</td>
<td>6.18</td>
<td>1.04</td>
<td>146</td>
</tr>
</tbody>
</table>
Teachers were also asked to respond to the following statements regarding the extent (1 = Strongly Disagree to 5 = Strongly Agree) to which teachers thought the Hawaii Academy tools and resources might impact the retention of teachers. Two statements were posed:

1. Availability of new tools and resources with technical support increases the retention of teachers in schools (Tools 1).
2. I am personally more inclined to stay in teaching because of the added tools, resources and technical support provided by programs such as the Hawaii FIRST Academy (Tools 2).

As shown in Table 2, and graphically displayed in Figure 2, the spring 2014 teachers were similar to previous years’ respondents in their belief that the resources and tools were more useful for retaining teachers in general but did not necessarily believe as strongly that the resources and tools were as responsible for retaining the teachers personally. This finding is noteworthy because although the 2014 sample was more positive in their STEM dispositions than the previous three years, their beliefs about the usefulness of the resources and support were almost identical to the views of the responding teachers from the previous three years.

Table 2. Tool Measures Related to Teacher Retention for Hawaii Teachers, 2011 - 2014

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>Mean</td>
<td>SD</td>
<td>N</td>
</tr>
<tr>
<td>Tools 1</td>
<td>86</td>
<td>4.24</td>
<td>.84</td>
<td>146</td>
</tr>
<tr>
<td>Tools 2</td>
<td>85</td>
<td>4.05</td>
<td>1.03</td>
<td>146</td>
</tr>
</tbody>
</table>
Context of Hawaii Teachers with Teachers in other STEM-Related Programs

Two STEM-related programs for which teacher data were collected using the same STEM Semantic Survey include the NSF sponsored Middle Schoolers Out to Save the World (MSOSW) project and the foundation-funded Communication in Science, Technology, Engineering, and Mathematics (C-STEM) program. In the MSOSW project, teachers attend an institute to learn about an energy-related curriculum and how to implement the curriculum with their students. MSOSW teachers also are provided with energy monitors, web enhanced teaching opportunities, curriculum and ongoing support from the project personnel. The C-STEM program involves a year-long school-based afterschool program as well as a competition at the end of the school year. Students prepare during the school year for the C-STEM Challenge which engages students in multi-age groups to collaboratively solve six challenges that are designed by industry professionals. These challenges reflect national standards-aligned project-based learning activities. These programs are more fully described in detail in separate publications (Christensen, Knezek, & Tyler-Wood, 2014b; Knezek, Christensen, Tyler-Wood, & Periathuruvadi, 2013).

Data from the 2014 Hawaii STEM Academy teachers can be compared to MSOSW and C-STEM programs. An analysis of teacher perceptions is appropriate because all three programs focus on teachers integrating STEM enhanced activities for teaching and learning. As shown in Table 3 and illustrated in Figure 3, the Hawaii STEM Academy teachers have dispositions comparable to the teachers in the NSF-funded MSOSW project teachers as well as the C-STEM program teachers.
Table 3. Comparison of Means for STEM Semantic Scales for Three Groups of Teachers Involved in STEM Enhancement Activities

<table>
<thead>
<tr>
<th></th>
<th>C-STEM teachers</th>
<th>MSOSW Teachers Fall 2013</th>
<th>Hawaii Teachers Spring 2014</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>Mean</td>
<td>SD</td>
</tr>
<tr>
<td>STEM Science</td>
<td>33</td>
<td>6.41</td>
<td>.89</td>
</tr>
<tr>
<td>STEM Math</td>
<td>33</td>
<td>5.42</td>
<td>1.43</td>
</tr>
<tr>
<td>STEM Engineering</td>
<td>33</td>
<td>6.25</td>
<td>1.00</td>
</tr>
<tr>
<td>STEM Technology</td>
<td>32</td>
<td>6.51</td>
<td>.80</td>
</tr>
<tr>
<td>STEM Career</td>
<td>33</td>
<td>6.32</td>
<td>1.09</td>
</tr>
</tbody>
</table>

Figure 3. Middle school teachers’ STEM dispositions from three STEM enhancement programs.

C-STEM students also displayed high dispositions toward STEM measures on the same instruments (Christensen, Knezek, & Tyler-Wood, 2014b). If we expect students to exhibit positive attitudes toward and an affinity towards science, it is important that teachers possess high attitudes (Baldwin, 2014). Teacher attitudes have been shown to have an impact on student attitudes in areas such as technology (Christensen, 2002). We therefore can infer that the dispositions of the teachers in STEM programs are likely to have a positive impact on their students’ dispositions toward STEM.
Discussion

STEM Enrichment Educators

As shown in Figure 4, profiles for teachers in all three STEM programs are similar to persons in the category labeled STEM professionals. This latter category includes university faculty and research scientists who are National Science Foundation project principal investigators, as well as teacher educators and school district or statewide technology coordinators. The high alignment of the teachers surveyed from the three STEM programs examined in this paper, with the group labeled STEM professionals, indicates that perhaps a new group name, such as STEM enrichment educators, is needed for teachers like those in the three programs featured in this study. This new group would encompass K-12 educators who are focused on preparing the next generation of STEM professionals to participate in the STEM workforce of the future.

Disposition of Future Teachers

The university preservice students contributing data for the contrast group in this study were in their sophomore or junior year in teacher education programs. The levels of dispositions for this group represented in Figure 4 have found to be stable in replication studies over three years (Knezek, Christensen, & Tyler-Wood, 2011). Most of the teacher candidates were planning to be elementary school teachers. Based on their relatively low dispositions toward STEM content areas and STEM as a career, it appears there is work to be done to prepare the candidates for their future classrooms if we expect them to display and transmit positive attitudes toward STEM when they teach the next generation.

Figure 4. Distribution of STEM dispositions for preservice teacher candidates versus three groups of STEM enrichment educators.
Hope for STEM Enrichment Educator Retention

Through examination of the Tools measures (encouragement to stay in teaching) for the Hawaii program teachers, and comparing these teachers’ STEM dispositions to those of teachers participating in the MSOSW and C-STEM projects, we can infer that the rich training and activities related to the latter two programs may help retain teachers. This finding is consistent with the Will, Skill, Tool (WST) model of technology integration (Hancock, Knezek, & Christensen, 2003; Knezek, Christensen, Hancock, & Shoho, 2000) as broadly applied to STEM education in general. The model specifies that teachers require will (positive attitudes) in addition to the skill and access to resources and tools in order to become effective teachers of STEM. Teachers participating in all three STEM programs examined in this study clearly have high will – as indicated through their highly positive STEM dispositions.

Conclusions

Teachers with positive STEM dispositions are not only more likely to transfer their love of STEM to their current students, but are probably more likely to stay in teaching, thus allowing experienced, enthusiastic teachers to prepare a pipeline of students for the STEM workforce of the future. Teachers in the STEM-enhanced programs examined in this paper are finding the necessary support and professional development to retain their enthusiasm for teaching STEM. Across the US we are confident there is a wide distribution of teachers who have high dispositions toward STEM and will transfer that enthusiasm to their students. Programs such as those described in this paper seem to be successful in fostering and maintaining positive dispositions in teachers regardless of whether they are state funded, federally funded, foundation funded or funded by corporate donations. These programs can serve as models for other educational entities seeking to enhance the education of students to fulfill the need for the STEM workforce of the future.

References


**Acknowledgement**

This research was supported in part by the U.S. National Science Foundation Innovative Technology Experiences for Students and Teachers (ITEST) Grant #1312168, by the Hawaii State Department of Education, and by the Manoa Innovation Center, Research Corporation of the University of Hawaii.
ABSTRACT PROPOSAL TITLE:

An HBCU Honors College Formula for Recruitment & Retention of Superior Students: Setting a High Bar for Academic Achievement, Service, Leadership

Research Objectives:

Beginning its fifth year of implementation, the SC State University Honors College currently enrolls nearly 300 undergraduate scholars, and it has a 90% retention rate for students who complete their degree requirements within four years or less. The Honors College also has a high rate (average of 50%) of its students who apply to and are accepted to prestigious graduate and professional schools, often with full fellowships for the program disciplines. The Honors College also boasts of a high placement rate of these scholars in their respective career fields. These same scholars often dominate the university landscape as servant leaders and as role models for other non-honors students to emulate.

There is currently a dearth of literature and research on the successes of academically superior students of color who hold membership in honors programs/honors colleges at Historically Black Colleges and Universities (HBCUs). In our daily realm of working with academically gifted and talented students from freshman year to graduation, the Honors College realizes that these outcomes are often the end result of an influential honors culture that helps to support and prepare them strategically to navigate success in their career lives beyond college—these efforts may take the forms of personalized customer service, staff interactions advisement, peer mentoring, study abroad/exchange programs, tutorial programs, character education, summer undergraduate research experiences with faculty, leadership development, community service, cultural engagement and community service. Therefore, the following research objectives are stated as:

1) To define the importance of what the HBCU Honors College experience and its culture mean to our student stakeholders that it serves and how it influences their mindset for excellence and leadership;

2) To showcase student profiles in collegiate honors education through real-life success stories case studies of how the Honors College experience has left an imprint on student scholars;
**Proposed Methodology:**

Methodologies used here can take the forms of student surveys and anecdotal evidence—to include supporting documentation on retention and graduation rates from our Office of Institutional Research and our Career Development Center.

**Discussion of Expected Outcomes:**

The Honors College anticipates that these outcomes will reinforce our premise and belief that within an HBCU Honors College culture of today’s millennial students, when high expectations are clearly set early on for these students academically--in ways that show concern, nurturing and respect for their lives and general well-being, and in ways that resonate with and are meaningful to them in reinforcing their various gifts, talents and potential, they will often respond in kind with the strong hallmarks of achievement and leadership in these cases.
The Interplay Between Teacher Professional Development and Community Development: Building Capacity in International Settings

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Abstract

Previous research on educational efforts abroad has focused on U.S. teacher professional development and international community development as two separate programmatic goals. However, recent research points to the effectiveness of connecting professional and community development activities in providing meaningful and contextual experiences for U.S. educators while simultaneously building capacity in communities abroad. This study will report on the multi-year programmatic activities of the The Global Educator international summer educational leadership component of the ExcELs program for U.S. educators of English Learners (EL) in the state of Sacatepéquez, Guatemala. Funded by a grant from the U.S. Department of Education’s Office of English Language Acquisition (OELA), the ExcELs program focuses on fostering professional growth and leadership in U.S. educators of English Learners through a) pedagogical, b) linguistic, c) cultural and d) community building activities locally and abroad. In Phase 1, the study will explore data collected across 3 years of the project including qualitative and quantitative surveys (n=404), campus needs assessments (n=45), focus groups, semi-structured interviews and teachers’ journal entries to examine a) the reactions and reflections of the U.S. educators engaged in community building activities abroad, b) to denote the means by which collaborative efforts between the local community and project goals aligned to develop contextual and meaningful activities for all involved and c) how the U.S. educators’ participation in the program will or has affected their role as educators of English Learners in their local schools. In Phase 2, the study will explore the role these community building activities are playing in building capacity in Guatemalan educators in rural and urban settings. Findings from the study
could provide contextual evidence for future programming that develops educators who serve as leaders in the local and international context and who build capacity in the communities in which their students reside.
Abstract:

Over the past 30 years, women in the United States have been earning Ph.D.s in STEM fields at increasing rates (2006 NSF data: 52% in life sciences, 30% in mathematics and life sciences, and 20% in engineering and computer science). In academia, women make up approximately 30% of the STEM faculty (these numbers vary greatly by discipline). However, women of color make up less than 5% of the STEM Ph.D.s, and Native women less than 1%. The goal of this project is to gather insights about factors that influenced career decisions of Native American, Native Hawaiian, and Alaska Native women with earned doctorates in STEM fields.

The research team identified more than 30 women self-identified as Native American, Native Hawaiian, and/or Alaska Native with earned Ph.D.s in STEM disciplines working in academia. Several of these women participated in a study that focused on their career path and cultural identity. Through qualitative analysis of interviews and
surveys, our objective is to discover emerging themes that coalesce into finite results and insights used to inform programming and policies that facilitate recruitment and retention of NA/AN/NH women in STEM disciplines. Initial analysis shows broad links around Identity, Relationships, Cultural Connections and Resources. Our presentation will include a discussion of the impact of family and mentors on success through graduate school and the correlation of culture and/or identity with career path choices.
Title: Difficulty in Teaching Nineteenth-Century British Literature to Japanese Undergraduate Students

Topic area: Language Education

Presentation format: Paper session

Description: There is difficulty in teaching Austen, Dickens, Hardy to Japanese undergraduate students because of linguistic, cultural and historical gaps, and the lack of students' interest in and knowledge of literature. In my presentation, I would like to argue why it is difficult to teach nineteenth-century British literature to non-native English speaking students, and how to foster their interest and encourage them to enjoy reading.

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Difficulty in Teaching Nineteenth-Century British Literature to Japanese Undergraduate Students

Akiko Takei

Abstract

Teaching nineteenth-century British literature to Japanese undergraduates is difficult because of linguistic, historical, and cultural gaps, and the lack of students' interest in literature. To alleviate this difficulty, it is first important to solve linguistic gaps and encourage students to have an interest, since improving English proficiency depends on each student's motivation. Then, it requires much effort to understand the historical and cultural background in which the novels were produced. Moreover, there are many other opportunities for students to enjoy themselves, which are far more attractive than intensively reading books. Teachers should bear in mind that students' interests are not always the same as their own and think how to lessen students' instinctive aversion to reading, and help them to find something common to both nineteenth-century Britain and today's Japan.

Keywords

literature, Japanese students, gap

Introduction

To begin, I would like to introduce my research and teaching history. I specialize in nineteenth-century British literature, and completed a PhD on Austen and medicine. In addition, I have enjoyed Dickens, Thackeray, the Brontës, George Eliot, and Hardy. In 2005, I received a tenure post in the Faculty of Education, Yamaguchi University, Japan, where I worked for 3 years. In those days, my students aimed to be teachers in elementary, junior, or high school. Although they were hardworking and well-focused, they were less interested in literature class than English teaching theory and method. Since 2008, I have been working for my current workplace, Chukyo University, where I am in charge of liberal arts course and teach English. Unlike Yamaguchi students, my Chukyo students are not always English majors. This is my teaching history until now.

As my teaching experience has demonstrated, there has always been difficulty in teaching British literature, including Austen, Dickens, and Hardy, to Japanese undergraduate students, even though to whose with satisfactory English proficiency. There are three main reasons: linguistic, cultural, and historical gaps, as well as lack of
students’ interest in and knowledge of literature (they do not like Japanese classics such as *Genji* as well as Victorian literature). In my presentation, I would like to argue the difficulties of teaching nineteenth-century British literature to non-native English speaking students, and how to foster their interest and encourage them to enjoy reading.

1. Linguistic gap

In reading British literature, the greatest barrier for non-native English speaking students is, no doubt, in understanding English. For instance, in Japan, it is said that with the English grammar and vocabulary learned in junior high school, Japanese can read *Harry Potter* without much difficulty. However, my students experience difficulties in reading a few chapters in *Harry Potter*. It is thus unsurprising that they take greater pains to read Austen, Dickens, and George Eliot.

Up to now, all of Austen’s and the Brontës’ novels, most of Dickens’s and George Eliot’s novels, and several of Hardy’s novels have been translated into Japanese. For instance, each novelist’s most important work—*Pride and Prejudice*, *Jane Eyre*, *David Copperfield*, and *Tess of the D’Urbervilles*—have been translated by multiple translators. On the other hand, with the exception of *Vanity Fair*, Thackeray’s novels have not been translated at all, while only some of Trollope’s novels have been translated. These translations are available in university and public libraries, but rarely have my students read them.

Now, Japanese universities hold classes for 30 weeks in a year. Taking the English proficiency of Japanese undergraduates into consideration, it is impossible for them to finish reading a Victorian novel even with the help of a Japanese translation. At the beginning of a class, I have recommended to my students that they should read the Japanese translation or see the film version of a novel in advance, in order to grasp the plot and characters’ temperaments beforehand. By referring to the translation or film as they read the original English, they can understand the plot and the reasons for the characters’ actions and behaviors. If they cannot understand the plot, their motivation is diminished and every class turns into hell.

As regards references to translation, Japanese university teachers have different ideas. Some are against reading translations on the ground that it is impossible to understand each novelist’s style in Japanese, while the translations are not always correct. However, when it comes to teaching undergraduates, making them find something fun is essential because most people read for pleasure, not to be bored. Nobody wants to do what they find uninteresting and boring. Moreover, the quality of
translation is generally improving.

2. Historical and cultural gaps

In addition to the linguistic gap, there are historical and cultural gaps between twenty-first-century Japanese undergraduates and their British counterparts. For instance, to enjoy Austen’s novels, a basic knowledge of her biography (for instance, her reading experiences, as well as her relation with Cassandra Austen and their other siblings) is required. In reading Dickens, the knowledge of his time period (especially his labor at Warren’s Blacking Warehouse in his childhood, the break-up of his marriage, his liaison with Ellen Ternan) and the Victorian age is likewise necessary. Yet, my students are unfamiliar with the history of the Regency and Victorian Britain. Thus, I have presented the chronology of publications and life timeline of each writer, and explained important historical events, such as the French Revolution and Industrial Revolution, so that my students can understand how the novels are products of the age and society in which their authors lived.

Furthermore, cultural gaps are more troublesome than historical ones. I would like to present two examples. In eighteenth- and mid-nineteenth-century Britain, mail was the only means of communication over great distances. The delivery of letters was easily delayed and not always guaranteed. In such circumstances, both happy and unhappy events took place because of miscommunication. However, this is unimaginable to current university students, who have used mobile phones since their childhood. Another example of difficulty is understanding women’s social standing. From Austen’s time to Hardy’s, women who belonged to the middle classes could not earn a living by themselves. Their options were to marry someone or to remain unmarried: yet, the former option was not always available and the latter was regarded as shameful. To quote Charlotte Lucas in *Pride and Prejudice*, marriage was “the only provision for well-educated young women of small fortune, and however uncertain of giving happiness, must be their pleasantest preservative from want” (vol.1, ch.22). Yet, my students, living in Japan in the 2010s, cannot fully understand the circumstances in which Elizabeth Bennet and Charlotte Lucas are placed. To help students, I often compare the “marriage market” in which Regency and Victorian women lived with present day Japan’s competition in job hunting.

However, when it comes to the class-based society, my students understand well because they have been compared with their siblings at home since they were born. At school and in their communities, they are evaluated based upon their looks, temperament, academic ability, and family background. Everywhere in Japanese society,
there is hierarchy. This seems to be characteristic of the Japanese, who are said to have esteemed homogeneity and preferred similarity with others.

3. Lack of interest in literature and reading

Finally, students' lack of interest in literature and reading is most problematic. In Japan, the number of English majors has been decreasing year by year, largely because of a long-term depression. Among English majors, the number of those studying British literature has dwindled. The data below shows the number of seniors in a certain private university in Tokyo who wrote bachelor theses on the nineteenth-century British novel in the years 2008-2012.

2008
Number of seniors: 99
Number of theses on the eighteenth- and nineteenth-century British novel: 13
Austen: 2; C. Brontë: 5; E. Brontë: 1; Hardy: 4; Gissing: 1

2009
Number of seniors: 116
Number of theses on the eighteenth- and nineteenth-century British novel: 6
Austen: 2; Dickens: 3; Hardy: 1

2010
Number of seniors: 104
Number of theses on the eighteenth- and nineteenth-century British novel: 15
Fielding: 1; Austen: 3; Dickens: 1; C. Brontë: 3; E. Brontë: 2; G. Eliot: 1; Hardy: 4

2011
Number of seniors: 123
Number of theses on the eighteenth- and nineteenth-century British novel: 6
Austen: 2; Dickens: 3; C. Brontë: 1

2012
Number of seniors: 93
Number of theses on the eighteenth- and nineteenth-century British novel: 13
Austen: 5; Dickens: 4; C. Brontë: 2; Hardy: 2
Although there are increases and decreases each year, nineteenth-century British novels are not popular in this university. The English proficiency of students in this university is said to be fairly good among Japanese universities. Yet, none has argued a novel of which Japanese translation is unavailable or not easily available, for instance, *Sketches by Boz* and *Middlemarch*. As noted already, it is impossible for Japanese undergraduates to write a paper on British novels without the help of translation.

As far as I know, many students associate the word “literature” and “reading” with something old-fashioned and boring. Few have a regular reading habit and are reluctant to see even TV and film adaptations. They might be impatient when it comes to sitting and intensively performing a task for several hours. To excite their interest as much as possible, I often ask, “If you were..., what should you do?” For instance, “If you were Elizabeth Bennet, would you be excited to see Pemberley?”; “If you were David, who would you prefer, Dora or Agnes?”; “If you were Angel, would you give up on Tess or go on living with her?” These questions aim to demonstrate that the behavioral patterns of Austen’s and Dickens’s characters are the same as ours, and that classics are worth reading because they exquisitely describe each character’s state of mind. One of my students claimed that Austen’s novels were somewhat similar to soap operas because both described nasty women quite well.

4. Conclusion

Based on my experience and the circumstances in which average Japanese undergraduates are placed, teaching nineteenth-century British literature to Japanese students is tough. To alleviate this difficulty, it is first important to solve language gaps and encourage student to have an interest, since improving English proficiency depends on each student’s motivation. However, without a plan to study abroad, it would be difficult for a student to have the specific goal to study English. Even then, it requires much effort to understand the historical and cultural background in which the novels were produced. Moreover, they have many other opportunities to enjoy themselves, which are far more attractive than intensively reading books. This means they are in a circumstance where studying could be discouraged at any moment. Teachers should bear in mind that students’ interests are not always the same as their own and think how to lessen students’ instinctive aversion to reading, and help them to find something common to both nineteenth-century Britain and today’s Japan.

*This research is funded by Grants-in-Aid for Scientific Research, Japan Society for the Promotion of Science.*
Gamification in education to Increase student motivation and engagement

Gamification is not to be confused with game-based learning which requires schools to have large budgets and specialized staff to create video games. Gamification uses game elements and frameworks that consumers have been exposed to for years. Gamification has been successful in inspiring increased motivation and engagement of the students and can extend to parental and community engagement. This presentation explores the elements of gamification and the transposition of these elements into a classroom setting. As the reality of schools change, in rural and urban locales, so must the classroom. Harnessing the elements that drive relentless efforts to succeed in the virtual world can change the effects on students and their learning experiences. More specific to Saskatchewan, is the lower education achievement levels compared to Canada. Aboriginal people 15 years and older with no certificate, diploma or degree represents 49.4% compared to non-Aboriginals reported at 30.2% (Statistics Canada, 2006).
Title of submission: Educating Kaqchikel Children: A Sociolinguistic Approach to Exploring Teachers’ Perceptions of Intercultural Bilingual Education in Guatemala

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Abstract:

Educating Kaqchikel Children: A Sociolinguistic Approach to Exploring Teachers’ Perceptions of Intercultural Bilingual Education in Guatemala

T’Nia C. Crutchfield

Abstract

Low educational attainment of indigenous students in Guatemala confirms the necessity for effective implementation of the Intercultural Bilingual Education (IBE) policy. This paper examines teacher perceptions of IBE and quality education in a rural Kaqchikel elementary school in Guatemala. Eight semi-structured qualitative interviews were conducted with indigenous and non-indigenous teachers ranging from PAIN (3yrs) to 5th grade. Analyses of participant comments are presented according to three main categories: language learning, teacher constructions of quality education, and cultural identity and indigenous pride. Findings indicate that teachers’ language deficiency in Kaqchikel directly contributes to students’ low academic performance. As such, Kaqchikel is viewed as the preferred language of instruction within the classroom in order to enhance students’ academic and social development. Factors associated with quality education are discussed. Education reform must include national support, socio-economic improvements for parents, and building teacher capacity through effective teaching strategies and language training to ensure all stakeholders are active in preventing academic failure of students.
1. Title of the submission
Research of Learning Activities outside of Undergraduate Seminars

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6. Abstract

In response to the question of what learning should take place for an unknown future (Barnett, 2004), we must consider what kind of education provided by universities would be appropriate for students. As we transition to a knowledge-based society, there is a strong demand for individuals who have the ability to respond to an unexpected future, and generic skills have attracted attention as the key to surviving in an age of rapid change. Generic skills are abilities and attributes that should be cultivated in a four-year bachelor’s program and include thinking critically, solving problems, using information, engaging in teamwork, and employing self-management. Interactive education and active learning play a significant role in acquiring these skills, and undergraduate seminars are considered to be effective because they involve students engaging in interpersonal relationships, solving problems, and demonstrating knowledge and skills.

Seminars were born in the nineteenth century in Germany under the idea of “education through research”, and were introduced to Japan in the twentieth century (Ushiogi, 1997). Seminars are held for a small number of students, and faculties are able to provide more individual, careful, and polite instruction for students than in a regular classroom. A popular seminar format is one in which an faculty and about 20 students participate in a meeting intended to help the students gain further understanding of their research project, and the students receive the advice of the faculty and other students about the state of progress and the problems with their research in a specific domain of expertise.

Seminars are defined in two ways in the context of Japanese higher education: (A) an educational method in which presentation and discussion are the center of activity for a faculty and a small group of students, and (B) a community which is comprised of a faculty and students (Mouri, 2006). The Oxford Advanced Learner’s Dictionary states that a “seminar is a class at university or college when a small group of students and a teacher discuss or study a particular topic.” Oberst et al. (2009) state that “the seminar represents a methodology focused on the acquisition of competences and reflective skills and abilities.” Most faculties and researchers consider seminars as a learning community which includes relationships based on mutual understanding and trust.

Being an important teaching method, along with lectures in university education, seminars also represent research-oriented and dialogue-based communities of the faculty and students. They offer students the opportunity for close interaction with the faculty and help develop new relationships; it is possible for students to absorb ideas and tacit knowledge of specialized fields through daily communication. In other words, the value of learning in seminars is supported by both formal learning pursuits and informal activities outside of class. For example, there are various activities that are relevant to seminars: camps, drinking parties, competition among seminars, and networking with other universities’ students.

Such extracurricular activities complement and strengthen the learning and the atmosphere in class. In light of the positive effects of informal learning on students’ achievements of various abilities, activities outside of class seem to promote the growth of generic skills. Additionally, students feel that seminars are a home and a place where they belong. Yet, seminar activities outside of class and their outcome have not been fully discussed in previous studies.
The present study investigates seminar learning activities that occur outside of class for second-, third-, and fourth-year university students, and then considers their effects on learning outcomes, including generic skills. The method will consist of both a quantitative and a qualitative survey based on the following three points: (a) structure, (b) experience, and (c) outcome. First, we will conduct semi-structured interviews with 20 students who engage in extracurricular seminar activities.

Sample questions:

- What kind of activities do you participate in outside of class?
- How are seminar activities promoted outside of class?
- What kind of instruction and advice does the faculty provide?
- What experiences have you had through these activities and how do you evaluate them?
- What kind of knowledge, skills, and attitudes have you acquired?

Next, we will develop two questionnaires based on the results of the interviews and survey 200 seminars in the Department of Humanities and Social Sciences. One survey is for faculties who conduct the seminars, and is intended to provide insight into the structure of extracurricular seminar activities. The other is for students who attend the seminars, and aims at understanding their experience and the outcome. After the study is completed, we will analyze the data using exploratory factor analysis and multilevel correlation analysis to reveal the influence of extracurricular seminar activities on students’ learning outcomes, including generic skills.

References
The Effects of Pre-service Early Childhood Teacher’s Gratitude disposition on Happiness: A Mediating Effect of Hope and Optimism

Haeik Hwang, Jeonghwa Tak, Hyunmi Kang

The purpose of this study was to examine the effect of Gratitude disposition on Happiness and to analysis the mediating effects of Hope and Optimism between Gratitude disposition and Happiness. Two research questions were posed:
1. What is the relationship of Gratitude disposition, Happiness, Hope and Optimism in Pre-service early childhood teacher?
2. Does Pre-service early childhood teacher’s Hope and Optimism mediate the relationship between the Gratitude disposition on Happiness?

The subjects in this study were 192 Pre-service Early Childhood Teachers in Busan in South Korea. The psychological tests used in this research included the Gratitude Questionnaire-6(GQ-6), Happiness Questionnaire (HQ), Snyder’s Hope Scale and Optimism Questionnaire(LOT-R).

The findings of the study were as follows:
First, a standard regression showed that Pre-service early childhood teacher’s Gratitude disposition has a significant positive effect on Happiness. And there was a significant positive correlation among the subfactors of Gratitude disposition, Happiness, Hope and Optimism.

Second, using structural equations modeling supported the hypothesized model with Hope and Optimism mediating the positive association between Gratitude disposition on Happiness. According to the mediating effects analysis, the Happiness had direct and indirect effects on structural equations modeling. Especially the indirect effect between Gratitude disposition and Happiness was mediated by Hope and Optimism. Hope mediating effect was more powerful than Optimism mediating.

Key words: Pre-service early childhood teacher, Gratitude disposition, happiness, Hope, Optimism, Mediating effect
a. title of the submission:  

**A STUDY ON YOUNG CHILDREN'S IMAGE OF UNBORN THE BABY**  
: FOCUSING ON THEIR REPRESENTATION

b. topic area of the submission: Early Childhood Education

c. presentation format: Poster sessions

The purpose of this study is to investigate young people’s perceived images of the unborn baby by focusing on their representations. The study provided the opportunity to consider those represented images in terms of themes or phenomena that are related to the unborn baby. This study could provide early childhood teachers with substantial information that help young children realize the importance of the fetal period and obtain a better view of the unborn baby.

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Abstract

A STUDY ON YOUNG CHILDREN’S PERCEIVED IMAGES OF THE UNBORN BABY: FOCUSING ON THEIR REPRESENTATIONS

Tae-Kyung Kim, Yeon-Woo Jun, Hea-Soog Jo

INTRODUCTION

The purpose of this study is to investigate young people’s perceived images of the unborn baby by focusing on their representations. The unborn baby is an individual that is not still born since being implanted. According to the psychology of prenatal development, the unborn baby is an human being that can hear, understand and feel independently. A stage of development is
influenced by its previous stage and influences its next stage. Different age levels are correlated with one another, contributing to development. Similarly, the unborn baby as an independent human being influences young child development. Also, young children are influenced by the development of the unborn baby. The development of the unborn baby is meaningful in that it has lots of effects on individual young child development. It is recommendable for young children to be given the opportunity of perceiving the unborn baby in various manners, especially in relation to their family as well as their development. Meanwhile, representation means a thought that people have in mind about a not unspecified, but specified thing and at the same time an apparent expression of that thought (Lee, 1998). It also is a reproduction that is not objective, but subjective (Choi, 2013). Furthermore, representation is an activity that gives meaning to symbols, expresses perceived images and imaginatively reveals memories and experiences. This activity can be an effective means by which young children express their perceived images of the unborn baby. As they experience revealing their thoughts through representation, young child can raise their powers of observation, imitation, imagination and creation.

**METHOD**

Participants of this study were 10 three-year-old, 27 four-year-old and 25 five-year-old children who were attending at four kindergartens located in P city. The study asked those young children to represent their perceived images of the unborn baby during the free-choice activity session and then vocally explain the representations. The vocal responses were noted in writing on the side of the represented images. For data analysis, this study investigated the participants’ represented images of the unborn baby and their vocal responses to those images. The authors of this study examined or read through the images and the written vocal responses, drawing out main themes according to which the representations were categorized. Finally, the authors obtained the results of this study by repetitively reviewing the categories in order to raise their reliability and validity.

**RESULTS**

1. **Image of the unborn baby looking like themselves**: Young children imaged the unborn baby to look like themselves as they imagined their being inside mother. In addition, they children represented motions of the unborn baby dynamically.
2. **Image of the unborn baby looking like a miniature of mother**: Young children expressed the image of the unborn baby who is inside mother. These two imaged characters resemble with each other. More accurately, that baby looks like a miniature of that mother.

3. **Image of the unborn baby like that taken with supersonic waves**: Young children represented realistically how the unborn baby is inside the womb. That baby was illustrated having his or her eyes closed, being connected to the umbilical cord or crouching.

4. **Image of the unborn baby in the illusive world**: Young children represented the images of mother inside whom the unborn baby is and other family members. More specifically, they showed the unborn baby wearing the crown and his or her family members, and the background behind and the situation surrounding the baby and the family members. The children created a story that combined their inner memories of the unborn baby with imaginative and illusive images.

**DISCUSSIONS**

This study found that young children could recognize the unborn baby as a human being and the existence of organic relationships between that baby and young children, mother or family by representing their perceived images of the unborn baby. The study provided the opportunity to consider those represented images in terms of themes or phenomena that are related to the unborn baby. It is expected that this study could provide early childhood teachers with substantial information that help young children realize the importance of the fetal period and obtain a better view of the unborn baby.
A Study of Kindergarten Children's Perception about Meaning of 'Life': Focus on Children's Experience of Nature-Friendly Outdoor Activities

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Abstract

The purpose of this study is to investigate children's understanding about ‘life’ through nature-friendly outdoor activity experience.

The specific research questions were set as follows:
1. What is children's perception about meaning of ‘life’?

For this study, data were collected from 28 children aged 5 in the S kindergarten located in Y city. 28 participants engaged in nature-friendly outdoor activities for an hour from April to November. Outdoor activities are programmed in once a week.

To gather children's thought about 'life,' we analyzed children's paintings, writings and interview data. The investigation was conducted for 2 months from September to November. Additional data were collected through 3 interviews with a classroom teacher and teacher's documents.

The result of the study can be summarized as follows.

For children,
1. Life means to be alive. (animate beings)
2. Life includes both a moving object and an immovable object.
3. Life includes both a visible thing and an invisible thing.
4. Both living alone and living together are considered as a way of life.
5. All living things should be considered precious.

We live in an age of materialistic life paradigm. Therefore the sanctity of life seems to disappear. It is very important that we realize the value of life. Through nature-friendly outdoor activities, children have a chance to think of what life is. They seemed to naturally realize how precious life is. In early childhood education program including both public kindergartens and private educational sectors, nature-friendly outdoor activities should be encouraged.

Key words: life, Nature-Friendly Outdoor Activities
A. A Study on the Image Type of the Korean Traditional Child Rearing: Focused on Korean Mothers
B. topic area of Early Childhood Education
C. presentation format: Poster Session
A Study on the Image Type of the Korean Traditional Child Rearing: Focused on Korean Mothers

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The beliefs and practices of traditional child rearing have been accumulated by various trials of upbringing for ages, and their effectiveness leads young parents of today to raise their children with the help of traditional ways of upbringing. This study focuses on Korean mothers’ viewpoints on the traditional ways of upbringing and its aim is to find out values and special meanings from the respondents’ perspectives. In order to conduct the study, Q-methodology is applied to categorize and analyze Korean mothers’ opinions and views on the traditional ways of child rearing.

To conduct that, Q-group was first formed from mothers who raised their child in traditional way after their brainstorming about the method and interviewing them. Based on the subject’s shared statements, Q-standard was made with 40 subjects. The 40 subjects were asked to grade each statement from one to nine and then their responses were analyzed by QUANL program.

As a result, The image types were classified into 4 group. There were ‘Type 1 : Relationship-oriented parenting through harmony’, ‘Type 2 : Archetypal Parenting based on the Korean traditional values’, ‘Type 3 : Practice-oriented Parenting to respect life’, and ‘Type 4 : Attachment Parenting modern variants necessary’.

The study serves as a momentum to see the impact of traditional child rearing on modern child upbringing by examining Korean mother’s viewpoints on traditional child rearing. Based on the result, policy for child rearing can be made to support good relationships between parents and children and it also can serve as a key to solving various difficulties from raising children today. Moreover, this study can be a good resource to show perceptions and practices of traditional ways of upbringing and be a useful guideline to raise children in a traditional way.
Mental models of preschool teachers as a framework for understanding young children

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Abstract

The purpose of this study was to examine the framework of preschool teachers for understanding young children. This framework included teachers’ beliefs, practical knowledge, and perceptions. The concept of mental models was utilized to investigate the personal framework for understanding young children.

Data was collected in individual, semi-structured interviews with 16 preschool teachers and 17 nursery teachers. Case histories of 2 children (a ruffian boy and a shy girl) were presented to the teachers, who were then asked to provide a reaction to each child and the reasoning for their response. The results were analyzed with a modified grounded theory approach (M-GTA).

As a result, the following concepts have been generated based on commonalities between the two cases: “the perspective of feelings and behavior,” the perspective of children as a group,” “developmental expectations for children,” “view of development and child image in accordance with age,” and “relationship perspective.”

By comparing the two cases, teachers recognized that ruffian behavior was due to a lack of skills involving interpersonal relationships and emphasized the involvement of other children in order to help solve the issues for the ruffian boy. Teachers focused on the concepts of “the perspective of children as a group” and “the perspective of feelings and behavior” in this particular case. For the shy girl, teachers sensed that the girl enjoyed playing alone based on her own interests. For this case, teachers found the following concepts applicable: “the perspective of feelings and behavior” and the “relationship perspective” of children and teachers.

Keywords: Preschool and Nursery teachers, understanding young children, Mental model
Young Children's Risk Management in Tarzan Swing:
An Investigation Using a Self-Regulated Learning Framework

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Abstract

In order to reduce the number of accidents and injuries among children, Japanese kindergartens and nurseries are focusing on risk management. Because this generally leads to a greater degree of caution among teachers and administrators, children have fewer and fewer opportunities to engage in play that includes some element of risk. However, we think that if the risk management of children are at a sufficiently high level, then children would be able to take part in more challenging activities safely.

For this research, we interviewed five- and six-year-old children in order to investigate the risk management in the context of a Tarzan swing. A Tarzan swing is a swing constructed by hanging a long piece of rope from the branch of a tall tree and then tying a short stick to the end. The children sit upon this stick and swing back and forth on the rope.

We used self-regulated learning as a framework for our investigation. Self-regulated learning consists of three phases: forethought, performance, and self-reflection. To evaluate the effectiveness of self-regulated learning as a risk management, we asked children various questions, such as "Why did you want to try Tarzan swing that made you feel fear?" and "Can you tell me how you ride the Tarzan swing?" The participants were 25 kindergarten children aged between five and six years old (14 boys and 11 girls). They were children who normally play with the Tarzan swing.

The results (discussed here with respect to the three phases of self-regulated learning) were as follows.

Forethought phase: Answers relating to this phase involved the goal setting by the children (for example, closing their eyes and waving one hand while using the swing, or standing up on the swing, were typical goals). There were also descriptions of self-motivation (for example, “it looked like fun,” “I thought I’d try it,” or “I thought I could do it”). Performance phase: Answers related to this phase frequently brought up the idea of overcoming fear. Many children said, "I was brave." When they asked their task strategies, the children often mentioned their own individual method of riding the Tarzan swing: the place where they hold the rope, the place where they get off the swing, etc. Self-reflection phase: Answers related to this phase included the following comment: "When the stick turned 90 degrees, I thought it was dangerous."

Based on the above results, it is reasonable to say that even five- and six-year-old children have, to some extent, the ability to follow the three phases of self-regulated learning. If so, then their risk management ability is higher than previously believed. Therefore, they are unlikely to injure themselves, even if they do participate in play that incorporates some risk. Children using self-regulated learning to manage risk are potentially able to take part in a greater and more challenging variety of play experiences. This, in turn, would allow children to increase their abilities in various fields.
Title of Proposal:
Developing Mathematical Meaning In the Context of Multiplicative Situations

Topic Area of Submission
Mathematics Education

Presentation Format:
Paper Session (Research Paper)

Presentation Description:
In this report, we discuss ways teachers have leveraged key developmental understandings (Simon, 2006) formed during professional development activities focused on multiplicative reasoning. Research has shown that helping teachers build deep understandings of mathematical content they teach through meaningful activities can improve teaching practices and ultimately increase student achievement in mathematics (Hill et al., 2005). Our paper discusses a professional development trajectory focused on a unifying theme – multiplicative reasoning – and how teachers’ new ways of thinking provided a conceptual springboard for making sense of other multiplicative contexts.

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INTRODUCTION AND THEORETICAL FRAMEWORK

Through our work with teachers, we have learned that past professional development (PD) opportunities for mathematics teachers have primarily focused on strategies and methods for teaching, rather than developing meaningful content knowledge for mathematics. Yet, research has shown that a powerful way for improving the teaching and learning of mathematics is to engage teachers in 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). Consistent with Ma’s (1999) conclusion, we believe that if teachers develop a profound understanding of the fundamental mathematics that they teach, then they will be better prepared to engender these mathematical practices in the students that they teach.

With this in mind, we implemented a research-based PD experience for middle school mathematics teachers that included modeling the Common Core State Standards and Standards for Mathematical Practice (National Governors Association Center for Best Practices & Council of Chief State School Officers, 2010) through the unifying theme of multiplicative reasoning. Vergnaud (1994) 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. He refers to these ideas as ingredients for the multiplicative conceptual field (MCF), which he defines as a complex theory that is comprised of concepts (tools for analyzing situations) that become meaningful through situations (things that require multiplicative operations). The multiplicative situations are then analyzed through these concepts. This reflexive relationship between concepts and situations serves as the mathematical foundation for our investigation with middle school mathematics teachers. Furthermore, Vergnaud contends that MCF theory must allow the role of language and symbols in the development of multiplicative reasoning to remain prominent and at the forefront of one’s learning.

In our review of current curricular materials used in school mathematics, we have discovered that these materials are seriously lacking of an emphasis on multiplicative thinking even though the CCSSM include ideas built upon the ability to reason multiplicatively. Building a solid foundation for thinking multiplicatively entails deepening the language used to interpret, describe, and make sense of situations where multiplication is inherent. As early as Grade 5, the Common Core State Standards (National Governors Association Center for Best Practices & Council of Chief State School Officers, 2010) emphasize the need for students to think about multiplication as “times as large as.” For example, recognizing that \(5 \times (6 + 8)\) is five times as large as \(6 + 8\) provides a springboard for making sense of the distributive property where \(5(x + 8)\) can be thought of as five times as large as the quantity \(x + 8\). We can also conceptualize the expression \(5(x + 8)\) as five copies of the expression \(x + 8\) such that we have \((x + 8) + (x + 8) + (x + 8) + (x + 8) + (x + 8)\). While the language of “times as large as”
is quite powerful in making sense of multiplicative situations, we have found that first focusing on more primitive language, such as “copies of”, can foster one’s ability to conceptualize the notion of “times as large as.” Furthermore, we have found that when teachers have made sense of their own thinking relative to the notion of “copies of” in various contexts, they are then able to reason about other multiplicative situations with more conceptual constructions of the mathematics. These are a few of the findings we have discovered in our work with teachers when the focus of professional development is on multiplicative reasoning.

In this report, we present some of our findings that demonstrate how professional development experiences for teachers designed around a central mathematical theme – multiplicative reasoning – can improve teachers’ ability to reason about more advanced mathematical ideas contained in the multiplicative conceptual field. We will present evidence based on video data of teachers’ working in a school-based learning community.

Why a Focus on Middle School Math?

Research has shown that middle school is the gateway to high school course taking and college enrollment (Hill, 2007; Riley, 1997; Silva & Moses, 1990). In particular, completion of Algebra II in high school is strongly correlated with success in college as well as future earning potential (Adelman, 1999). We therefore believe that students possessing 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.

Consistent with Ma’s (1999) finding, we believe that increasing teachers’ content knowledge by attending to the meaning of the mathematics they teach will lead to improved students’ achievement. By specifically targeting middle school mathematics teachers and focusing on deepening their content knowledge, we can significantly improve middle school students’ mathematics achievement and at the same time greatly impact students’ readiness for their high school, college, and career experiences.

RESEARCH AND IMPLEMENTATION FRAMEWORK

The design of the PD experience for this study originated from the network of pedagogical content knowledge described by An, Kulm and Wu (2004, see Figure 2). The focus of this abridged framework is on students’ learning from the perspective of teaching as a convergent process focused on knowing students’ thinking. The process consists of 4 aspects: “building on students’ mathematical ideas, addressing students’ misconceptions, engaging students in mathematics learning, and promoting students’ thinking mathematically” (p. 148). Through the PD experience, teachers grappled with mathematical ideas based on how students conceive and misconceive the underlying ideas embedded in the mathematics. Teachers collaborated 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).

Using this framework that guided the teachers’ PD experience, we designed our research to address how the PD focused on content and students’ thinking contributed to teachers developing stronger conceptions of multiplicative reasoning. In short, we focused on answering the following research question: In what ways does a professional development experience focused on multiplicative reasoning contribute to the mathematical knowledge for teaching of middle school mathematics teachers?

**Multiplicative Concepts – A Sample Activity**

To develop teachers’ ability to *think* multiplicatively, the PD facilitator posed the following activity, called the Broomstick Activity, inspired by the work of Thompson and Saldanha (2003):

You have three broomsticks: The red broomstick is 3 feet long. The yellow broomstick is 4 feet long. The green broomstick is 6 feet long. How much longer is the green broomstick than the red broomstick? How much longer is the yellow broomstick than the red broomstick?

These questions require teachers to consider the various meanings of the phrase “how much longer” in both an additive interpretation and a multiplicative interpretation. In the case of the broomsticks activity, we can think about the green broomstick as measuring 3 feet longer than the red broomstick (additive). But we can also consider the green broomstick as measuring 2 red broomstick lengths, thus the green broomstick is twice as long as the red broomstick (multiplicative).

When confronted with these questions, many teachers first use the additive comparison by interpreting “more” as representing an amount added to the original length of the broomstick. After reflection, teachers began to realize that “more” can be interpreted in another way, namely as a multiplicative comparison of broomstick lengths. Afterwards, teachers are then asked to complete the following statements by filling in the blanks:

The green broomstick is ______ times as large as the yellow broomstick. The yellow broomstick is ______ times as large as the green broomstick. The yellow broomstick is ______ times as large as the red broomstick. The red broomstick is ______ times as large as the yellow broomstick.

Throughout the PD experience, teachers encountered additional activities designed to stimulate divergent thinking where a multiplicative comparison is necessary for
making sense of the posed situations. These activities were presented to the teachers during additional workshops and learning community sessions, which were called Collaborative Community of Learners (CCOLs). The purpose of our investigation was to study teachers’ thinking of multiplicative situations during the CCOL sessions to better understand how the mathematical content from the workshops transferred to other ideas teachers grappled with during these sessions.

METHODOLOGY

Sixty-seven middle school teachers in seven participating school districts located in the Southwest were recruited to participate in PD focused on building teachers’ content knowledge and mastery of the Common Core Standards for Mathematical Practice. In our investigation, we focused on one CCOL group composed of 5 teachers from the same school facilitated by a workshop facilitator. On occasion, 2-3 undergraduate students also attended and participated in the CCOL discussions. All CCOL sessions were videotaped over the course of one academic year for a total of 18 contact hours.

The videos from all CCOL meetings of this group were viewed to discover how teachers used the language of “copies of” and “times as large as” in multiplicative contexts relative to the mathematical ideas the group discussed. Specifically, we wanted to analyze how teachers leveraged their understanding of multiplicative comparisons from the broomsticks activity when they discussed ideas of division, the distributive property, proportions, and constant speed.

RESULTS

After analyzing the video data of the CCOL sessions, we found compelling evidence of teachers continuing to make sense of their thinking about multiplicative situations while connecting their thinking to other – and sometimes more advanced – mathematical ideas not explicitly addressed in the PD workshops. We found that the teachers who were able to conceptualize multiplicative contexts in terms of “copies of” or “times as large as” were then able to appropriately formalize their ways of thinking about the situation. However, those teachers who did not consider multiplicative contexts in this way often had difficulty reasoning through the situation. For example, consider the case of Jane and Tami who discussed the meaning of constant speed in the context below:

I was walking to school today. Assume that I walked at a constant speed during the entire trip, and also suppose that during one part of the trip I walked 50 feet in 11 seconds. How far do I travel in 7 seconds?

To make sense of the task, both teachers used a proportional correspondence diagram to illustrate their thinking. However, Tami’s thinking did not involve multiplicative (or proportional) comparisons. Rather, she decided to partition the distance segment in 10 pieces because she found dividing 50 into 11 parts too computationally difficult. She then counted by fives a total of seven times. An excerpt of her description follows:
Tami: I made my 11 seconds and I divided them into 11, whatever, segments, then I marked off the 7, so the 7 out of 11, and then I had my 50 and I counted by 5’s and then I marked off at the 35 point, that was 7.

When Jane, another teacher in the CCOL, asked Tami why she counted by 5’s for the distance segment of 50 feet, Tami responded by saying “because it was too big, too many numbers.” Jane then pointed out that Tami had, in fact, partitioned her distance into 10 segments, rather than 11. Then Jane followed up by asking “So if you did 7 out of 11 here (referring to the time segment), don’t you need to do 7 out of 11 there (referring to the distance segment)? Tami responded with “maybe”, then she asked Jane how she would do it.

Jane: But I said I needed 7 copies of that 1/11th of 50.
Facilitator: And what’s so special about the 1/11th?
Jane: Because this is 11 seconds, so if I’m taking 1/11th and I want to know what 7 copies of that is, then if I take this one and divide it into 11ths, then if I want 7 copies of that, so I’m making the equal proportion of 7/11ths of this (referring to the time segment) to 7/11ths of that (referring to the distance segment).

In this example, Jane was able to leverage her ways of thinking and the new language of “copies of” to make sense of the proportional correspondence between distance and time when thinking about constant speed. Figure 2 below is an illustration of Jane’s thinking of constant speed.

![Figure 2. An illustration of Jane’s thinking.](image)

Like in Jane’s case, we have more data of teachers across different CCOL sessions, showing evidence of their ability to reason multiplicatively using the language “copies of” in many different contexts, including proportional relationships, average rate of change, and even the distributive property. However, Tami’s ability to use MR was not fully developed to allow her to use the same number of regular partitions (copies) for both the distance and the time in order to respond to this task appropriately.

Our findings suggest that the language of “copies of” can be leveraged when making sense of multiplicative situations, especially when building robust notions of the meaning of “times as large as.” Furthermore, our findings also suggest that once teachers are able to develop their multiplicative way of thinking in situations,
they are then able to transfer these new ways of thinking to other multiplicative situations.

**DISCUSSION AND IMPLICATIONS**

Based on our findings and our work with teachers, we have realized the importance of developing language to help teachers make sense of mathematical tasks and situations, specifically those involving multiplicative comparisons. Many teachers did not have the mathematical tools or content knowledge necessary for conceptualizing and making sense of situations mathematically; rather, they tended to rely on their procedural knowledge when reasoning through multiplicative contexts. As a result, we believe that professional development with in-service and pre-service teachers should be focused on the unifying theme of multiplicative reasoning in order for teachers to develop new ways of thinking and making sense of the mathematics embedded in K-12 curriculum. As Ma (1999) found, we believe that when teachers develop a profound understanding of the mathematics they teach, they will be well positioned to stimulate productive ways of thinking in the students that they teach.

The implications of the findings for this study are: (1) The importance of meaningful language, such as “copies of” in developing teachers’ (and students’) ways of thinking about multiplicative situations, should be at the forefront of teaching and learning of mathematics, (2) The teacher professional development programs should focus on mathematical content where teachers have opportunities to create meaningful ways of thinking about the mathematics they teach, and (3) Further research in the area of language relative to multiplicative reasoning should be conducted to develop theory about the teaching and learning of multiplicative ideas.

In the future, our research efforts will focus on tracing the evolution of teachers’ multiplicative reasoning through semi-structured task-based interviews to study how teachers reason through critical tasks. Although we have evidence to suggest that ideas learned through activities in the PD experiences, such as the Broomstick Activity, are leveraged by teachers when working through other related situations, we do not yet understand how the ability to reason multiplicatively is fully developed in teachers and how thinking evolves from using the language of “copies of” to “times as large as” and beyond. Our future work will focus on investigating the trajectory of multiplicative reasoning to construct a conceptual framework for use in future professional development activities.

**Acknowledgements**

Research reported in this paper is being supported by National Science Foundation Grant No. DUE-1103080. Any conclusions or recommendations made are those of the authors and do not necessarily reflect official positions of the NSF.
References


Analysis of Learning Outcome and Preference for Classroom Composition in Basic Skills Courses in Higher Education

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Abstract:

The purposes of this study are to identify the instructors' and students' preference for classroom composition in basic skills courses and to compare the learning outcome between the homogeneous class and the heterogeneous class in the majors. The participants were 38 instructors who were teaching math, science, English, and writing in a university, and 418 freshmen who belonged to basic skills courses. Science teachers seemed to like the homogeneous class included in the same major students, however, English teachers and writing teachers preferred to the heterogeneous class included in the multi major students. Students were strong preference for the heterogeneous class because they'd like to expand their human network and had a chance to interact the different major students. These were not deemed statistically significant comparing of learning outcome between the homogeneous class and the heterogeneous class in math.

Key words: Basic skills, College Readiness, Classroom composition, Learning Outcome
Submission for Conference Proceedings

Page 1 details Page 2 Extended Abstract

**Title:** Music education meets music therapy: An assessment tool for special education

**Topic Area:** Music Education and Special Education

**Presentation format:** paper

**Presentation description:** This paper presents a music therapy assessment tool designed for the special education context. It draws on doctoral research (Langan, 2009; Langan, unpublished thesis 2012) which explored the relationship between music education and music therapy and investigated the two disciplines’ shared content. It includes viewing examples of music therapy in action and a discussion of the outcomes plus the international application of the assessment tool.

(word count=65)

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Music education meets music therapy: An assessment tool for special education

This paper presents a music therapy assessment tool (Langan, 2009, 2012) which offers a learning innovation across the disciplines of music education, special education and music therapy. It draws on doctoral research (Langan, 2009; Langan, unpublished thesis 2012) which explored the relationship between music education and music therapy and investigated their shared content. The research objectives included the production of an assessment tool which would facilitate music therapy in education settings. The methodology used in the research included clinical music therapy, teacher questionnaires, music therapist surveys and interviews. The results were analysed and informed the development of the assessment tool which relied on existing educational objectives and specifically designed music therapy objectives.

The research outcomes included the production of a practical assessment tool applicable in education and special education settings which is being applied by music therapists internationally. The tool facilitates integration and understanding of music therapy in the education setting. The most significant outcome is that it provides educators and therapists with an evaluation tool which supports the process of compliance and accountability for music therapy in education.

The paper defines music therapy, the methods used, the boundaries and overlaps with music education, articulating the shared skills and content areas. In this way, it achieves clarity regarding the similarities and differences between music educators and music therapists, while acknowledging and respecting the contributions of each in their respective disciplines. Clips of music therapy will be included in the presentation which provides an opportunity for participants to encounter music therapy in action in a special education classroom.

Words: 257
ABSTRACT

This paper focuses on a mentor-centered program and the research investigation was conducted at the University of Notre Dame. Focusing on the importance of partnering faculty mentors with underrepresented minority (URM) students via an undergraduate research experience, the Building Bridges program assists these students succeed academically. The program retains a significant majority of its STEM students while yielding a high rate of undergraduate researchers who are graduate-school bound. The narratives of the student participants and faculty mentors are explored study. Utilizing the interview transcripts, the researchers used an open coding approach to identify repeated themes and patterns, which were subsequently sorted into categories. The researchers identified relevant conceptual and theoretical frameworks that were used to guide the data collection and interpretation process.
Abstract

Title:

“The keys to providing a successful clinical supervision experience for a counselling practicum student?”

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Topic Area:

Counsellor Education

Abstract:

Counsellors and school administrators frequently are asked to provide supervision for Masters level counselling students. This paper will review the keys necessary in order to provide a successful counsellor-supervision experience, including: 1) requirements of a practicum supervisor and setting, 2) time commitment, 3) supervisory skills, experience and qualifications, 4) residual benefits to the setting, 5) supervisor – practicum student compatibility.
The article are a conclusion of three studies

Introduction
Modern society involves a range of choices related to health or medical treatments. It is important for all people to have knowledge of the human body’s functions and organs and to be able to transfer this knowledge into related contexts. In other words, it is important to understand how choices about factors such as diet, exercise and health affect the body and various organ systems.

Aim and research question
According to the Swedish and South African curriculum, by the end of the ninth grade, students should have learned about cells, the organs of the human body and how the organ systems function together (Skolverket, 2006; Department of Education, 2002). Several studies have confirmed that most ninth-grade students have some knowledge about the throat, stomach and intestines in the digestive system (Carvalho et al., 2004; Garcia-Barros, Martinez-Losada & Garrido, 2011; Mathai & Ramadas, 2009; Osborne et al., 2004; Reiss et al., 2002; Tunnicliffe 2004). The students’ knowledge of the digestive system is more developed than their knowledge of the gaseous exchange system and the skeletal system (Reiss et al., 2002), the excretion system (Tunnicliffe, 2004) and the respiratory system (Mathai & Ramadas, 2009). Even before starting compulsory schooling, children have some ideas about the digestive system (Martinez-Losada & Garrido, 2011). Knowledge about the bodily systems other than the digestive system are fragmentary, and it is difficult for students to connect different organ systems in explanations (Carvalho, Silva, Lima, Coquet & Clément, 2004; Clement, 2003; Cuthbert, 2000; Manokore and Reiss, 2003; Prokop & Fancovicova, 2006). The level of sophistication of students’ answers has been shown to depend on how questions are given to them. When asked
specifically to draw the urinary organs, students performed better than when they were asked to draw organ systems in general (Prokop, Fancovicová & Tunnicliffe 2009; Prokop & Fancovicová, 2006; Khawaja & Saxton, 2001). One the concept I use in the theoretical framework is transfer (Mayer, 2002; Salomon & Perkins, 1989; Spiro, Collins, Thota & Feltovich, 2003). The students have difficulties to detect the systems in the body and see the connection between micro and macro level (Assaraf, Dodick, & Tripto, 2013; Hmelo-Silver et al 2008) who is important in biology (Mayr, 2004). Schönborn and Bögeholtz (2009) emphasise definitions of horizontal transfer as the ability to transfer ideas from one context to another on the same organisational level (for example, different body systems on the macro level), and vertical transfer between different organisational levels (for example, between the circulatory system level and the cell level).

Students’ answers could be interpreted of misconceptions, but sometimes can the students’ answers be related to that science the students are been taught in school do not harmonized with the ideas that is prevalent in their everyday culture (Phelan et al, 1991; Aikenhead, 2006; Lemke, 2001). When the educators does not sufficiently take account the students’ own perceptions based outside of school, for example, their own beliefs, is there a risk that students do not adopt a scientifically based explanation model (Lemke, 2001). There is also a possibility that the students have not been introduced to the topic in such a manner that the students have had an opportunity to develop a scientific approach to the content (Phoenix, 2009; Vygotsky, L., 1934/1986).

The main question for this thesis is, “What ideas do ninth-grade students in Sweden and South Africa have about the human body and its functions, and how do their explanations vary regarding food, water, and painkiller pathways through the body?” Three research questions have been formulated to answer this question. The first question probes the students’ ability to transfer their ideas horizontally between different scenarios on the same organisation level and then compares the results with their ability to use more than two different organ systems in an explanation. The second question investigates how the students’ answers vary depending on the scenario and data collection method used. The third question probes how South African students’ express their ideas about the human body and organ systems in comparison with the Swedish study.

**Method**

Different kind’s methods were used to collect data in order to answer the research questions. Templates with an outline of a human body were used; open questions; multiple choice questions and interviews. The templates gave the
students the opportunity to answer by drawing and/or writing and to follow their preference in answering the template questions. Students’ drawings have been used as a method previously (e.g., Reiss et al., 2002; Tunnicliffe, 2004; Rowlands, 2004; Teixeira, 2000). Rowlands (2004) and Teixeira (2000) used it in connection to interviews with young children (10 years or younger). Written open questions were used to get the students to formulate explanations based on their own ideas. The multiple-choice questions focused on the students’ knowledge and have previously been used in Swedish schools, in TIMSS 1996 (Skolverket, 1996) and IEA 1983 (Skolöverstyrelsen, 1988). Interviews with the students were conducted in order to gain a richer and deeper understanding of the students’ ideas.

Two data collections were conducted; one with 88 Swedish students and one with 166 South African students. All of the students were in the ninth grade and approximately 15 or 16 years of age. Interviews were conducted with seven teachers who had taught the students in Sweden in subjects in which the syllabus included functions of the body and nutritious substances. The teachers were interviewed in order to confirm that the students had been taught about the digestive, circulation and excretion systems, as well as health-related questions. It was also important to confirm that none of the teachers had explicitly talked about painkillers in relation to the digestive and the circulation systems, since this scenario was meant to be new for the students. The same questions were given to the South African teachers, but we did not have permission to document the interviews.

The categories represent a measure of resemblance to scientific explanations and have an internal hierarchy based on a comparison with scientific explanations. The categories have similarities to those reported by Clément (2003) and Tunnicliffe (2004), but we have chosen more general descriptions in order to use the same categories for all student explanations, regardless of the scenario. This
provided the possibility to answer research question about the scenario-dependency of the students’ explanations. The categories are:

A. No answer or answer not related to the question
B. Non-scientific descriptions based on alternative ideas of the organ system
C. Descriptions following a scientific explanatory model – important parts missing
D. Descriptions following a scientific explanatory model – important parts included

The first category (A) captured those students who did not answer the question or gave answers associated with other issues. The second category (B) captured students whose answers were non-scientific descriptions based on alternative ideas of the organ system. Categories C and D were used for templates that partly or fully contained the expected systems. The expected systems were:

- **Sandwich** – digestive and circulatory systems
- **Painkiller** – digestive and circulatory systems
- **Water** – digestive, circulatory and excretion systems

The categorisation informs on whether students can transfer ideas between the “sandwich” and the “painkiller” scenarios, and whether they can use both two and three systems in their explanations. The categories from the analysis of the drawn and written answers to the template-questions were used to analyse the open questions, the multiple-choice questions and the interviews. When we use the term “circulation system”, the correct scientific expression is “cardio-vascular system”, but none of the students used the corresponding scientific term.

**Results**

The analyses show that the students are generally able to describe the digestive system when explaining how a sandwich works its way through the body, and are also able to link the circulatory system to the digestive system. However, the students struggled to describe the digestive and circulatory system in descriptions of the painkiller scenario. The pathway of the painkiller had not been taught in school. Furthermore, it was even more difficult for the students to connect three organ systems in the water scenario compared to transferring the digestive and circulatory systems between the sandwich and painkiller scenarios. In the water scenario, we expected students to include the excretion system; such as the kidneys. The textbook describes the kidneys and bladder and students had been taught about these. However, one-third of the students expressed a non-scientific model. Most of them described the pathway of the water by drawing a pipe directly from mouth to the kidneys. These students also had greater difficulty understanding the function of the kidneys. The water-question responses were analysed more deeply for five selected students’
answers to questionnaires and interviews. It turned out that the students’ ideas were either the same or changed to a less sophisticated explanation in the interview responses than in the questionnaire. This is different from the sandwich scenario, in which the interview showed similar or more sophisticated explanations.

When a similar study was conducted in five South African schools, it was found that, in contrast to studies in Sweden and other European countries, the non-scientific explanation with a direct link between mouth and kidneys was very unusual. However, almost half of the students had an idea that the water passes through the lungs on its way to the stomach. Some students even expressed a passage through the lungs before the stomach in the sandwich scenario. Several students stated that water, and food for that matter, is passed through the lungs to purify them. Another difference is that some of the students in South Africa thought that cells are involved in the systems, which none of the Swedish students did. Also, more South African students were able to connect more than three organ systems in the water scenario.

**Discussion**

Students found it difficult to transfer their ideas about the digestive and circulatory systems between the sandwich and the painkiller scenarios. However, the students had even greater difficulty linking three organ systems in their explanations. Note that the students received no tutoring about the pathway of a painkiller through the body, but they were taught about the digestive, circulation and excretion systems. One reason why the students had difficulty connecting the three systems was that their explanatory models rarely included both the macro and micro levels (Mayer, 2002; Mayr, 2004; Mathai & Ramada, 2009; Schön, Borg & Bögeholtz, 2009). The South African students were slightly better at linking the three organ systems than their Swedish counterparts, perhaps suggesting that they have a deeper understanding of the role of cells in the body.

That students found it difficult to explain the pathway of water. An indication of the difficulties are a numerous non-scientific explanatory models for the water scenario. Other European studies, such as Clement (2003) and Tunnicliff (2004), have described non-scientific explanatory model with a tube between the mouth and the kidneys, but this explanatory model is very unusual (just one) among the 166 South Africa students in the study. On the other hand, half the students in South African explained that water and sandwiches pass through the lungs on the way to the stomach. This kind of description was not represented in the European studies, but it is a frequent perception in South Africa. A smaller study conducted in Zimbabwe (Manokore & Reiss, 2003) showed that the explanatory
model with the lungs was also represented. One possible explanation could be that the answers are influenced by the students’ own cultures or lack of content, as these non-scientific explanations seem to be localised (Aikenhead, 2006; Lemke, 2001; Phelan et al, 1991; Phoenix, 2009; Vygotsky, L., 1934/1986). One explanation that the students provided about the water passing through the lungs was that the water cleans the lungs. It seems unlikely that this would be an explanation learnt in school, which points to a cultural origin. The explanation with an extra tube seems to be content dependent.

The students were interviewed in order to investigate the relation to the written responses and give them the opportunity to provide more detailed and complex explanations (Kvale 1997; Thagaard, 2004; Schoultz et al., 2001). This was consistent for the sandwich scenario, where the interviewees expressed more than they had shown in their written responses. For the water scenario, however, the students did not express a more detailed or more sophisticated understanding in the interviews – contrary to what was expected. It could be that the students had been helped if they had been given the use of various artefacts (Schoultz, 2002; Säljö 2005; Tunnicliff & Reiss, 1999) when asked to explain how the body’s organ systems are structured and interrelated.

References


The Impact of Nutrition Policies and Practices in Early Childhood Education Programs on Children’s Health and Eating Patterns

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In the last few decades obesity has tripled its rates in the United States, and currently 26.7% of children between the ages of 3 to 5 years of age (preschoolers) are overweight (Body Mass Index \( \geq 85\% \)) and 12.1% are obese (Body Mass Index \( \geq 95\% \)) (Ogden, Carroll, Kit, & Flegal, 2012). The rise in childhood obesity is concerning because research has found that children who are obese during their preschool years are five times more likely to be overweight during adolescence (Nader et al., 2006) and more than four times as likely to be obese during adulthood (Freedman et al., 2005). The rise in childhood obesity has led to an increase in diseases that were previously only seen in adulthood. For instance, childhood obesity increases the risk of diabetes, cardiovascular disease, hypertension, stroke, osteoarthritis, asthma, and certain cancers (Gluckman, Hanson, Cooper, & Thornburg, 2008; National Institute of Medicine, 2007); and subsequently an earlier onset of overall morbidity and mortality (Sun, Liang, & Huang, 2008). Additionally, by the age of 6 years old children have started to develop their body image (Smolak & Thompson, 2009a; Smolak & Thompson, 2009b), associating positive characteristics with thin body figures and negative characteristics with larger figures (Holub, 2008; Spiel, Paxton, & Yager, 2012). Body dissatisfaction has been associated with depression, lower self-esteem, and eating disorders (Neumark-Sztainer, 2006; Paxton, Neumark-Sztainer, Hannan, & Eisenberg, 2006). The evidence that childhood obesity impacts a child’s development across multiple domains emphasizes the crucial need to focus on nutrition in the early years.

The early years are known as the formative years and this is nowhere better seen than in the area of nutrition. It is during this time that children establish lifelong behaviors, thus providing a unique opportunity for intervention. Research has found that by the end of early childhood, children have developed consistent eating patterns. In this paper, eating patterns are
defined as components of food consumption, including: meal timing, frequency, environment, portion sizes, dietary quality and attitudes toward food consumption. This paper defines unhealthy eating patterns as eating behaviors and attitude that are associated with poor health outcomes. International studies find that unhealthy eating patterns develop in early childhood. One study found 14% of five-year-olds in the U.S. engage in dieting behaviors (Holub et al., 2005), and another study in Australia identified five year old children with clinical eating disorders, such as anorexia nervosa (Madden, Morris, Zurynski, Kohn, & Elliot, 2009).

As stated above, unhealthy eating patterns not only impact child development, but also have long term consequences on adult health.

It is important to first take a look at what is known about children’s eating habits. Adults play a large role in determining a young child’s nutritional patterns as they are completely dependent on the adults in their lives to meet their nutritional needs (Lindsay, Sussner, Kim, & Gortmaker, 2006). Parents are typically the individuals responsible for purchasing groceries, cooking meals, and preparing snacks all of which play a key role in influencing a child’s diet and eating habits (Lindsay et al., 2006). One consistent finding has been that children’s eating practices mirror that of their parents (Lindsay et al. 2006). Several studies have determined that parents influence a wide range of risk and protective factors in the development of unhealthy eating patterns (Fisher, Sinton, & Birch, 2009; Rodgers & Chabrol, 2009). For example a child’s level of neophobia, a person’s likelihood to reject novel foods, is directly correlated with a parent’s level of neophobia (Dovey, Staples, Gibson, & Halford, 2008). Studies have found that from as early as four to six months of age neophobia can be modified by repeated exposure (Dovey et al., 2008). For instance, a nursing mother’s dietary regiment can greatly impact her breastfeeding infant’s acceptance of new foods (Dovey et al., 2008). Child eating patterns can
also be influenced in utero through maternal diet and parental modeling (Johannsen, Johannsen, Specker, 2006, Rodgers & Chabrol, 2009; Savage, Fisher, & Birch, 2007). More specifically, there are three dominant types of food parenting style: permissive, authoritarian, and authoritative. The literature on nutrition caregiving style demonstrates that parents who are extremely controlling or authoritarian about their children’s food have children who are less able to self-regulate their food consumption; which laboratory, cross-section and longitudinal studies have found then places them at an increased risk for obesity (Clark, Goyder, Bissell, Blank, & Peters, 2007; Francis & Susman, 2009; Gortmaker, Kim, Lindsay, & Sussner, 2006). In this paper, self-regulation is defined as the ability to start and stop eating in response to hunger and fullness cues. Moreover, children’s television viewing, which is greatly determined by parents, has been shown to have a negative inverse correlation with the development of healthy eating habits (Maher, Lord, Hughner, & Childs, 2006). Specifically, research has found that many of the food advertisements targeted at children endorse unhealthy sugar and fat laden foods and that the exposure to such marketing greatly impacts children’s preference for such products (Maher et al, 2006). As smartphones and other technology have become more prevalent in children’s daily lives, screen time has increased rapidly over the past years, 64% of children under the age of 3 are watching media, averaging more than two hours a day (Rideout, 2011).

Nationwide there are approximately 15 million children under the age of 6 that are in non-parental childcare programs and spend the majority of their waking hours out of home and in the child care setting (Child Care Aware of America, 2012; Lindsey et al., 2006). Specifically, “preschool children enter care as early as six weeks of age and can be in care for as many as forty hours a week until they reach school age” (Story, Kaphingst, & French, 2006, p.145). Consequently, with the increasing numbers of children attending child care, these
programs contribute immensely to childhood nutrition and, the childcare environment offers a potentially powerful infrastructure in developing lifelong healthy eating habits. Based on the previous research, the most effective way to make change in this area is to focus interventions and research on the families and schools as they have been found to be the key determinants of children’s eating habits (Sloane et al., 2006).

In the U.S., every childcare program serving children must be licensed or regulated and thus comply with the nutrition standards set by their state licensing regulations, which vary widely from state to state and at best often meet very minimum nutritional standards (Story et al., 2006). Research for instance, has found that only “ten states limit foods and beverages of low nutritional value” and only “five states regulate vending machines” (Story et al., 2006, p.159). Story and colleagues (2006) report that of the 1,962 child care programs that participated in a nationwide study 50 percent served lunches that had more than 35 percent of calories from fat, over and beyond the United States’ Departments of Health and Agriculture’s recommended Dietary Guidelines. In addition to the excess fat, they found that minimal amounts of fruits and vegetables were served (Story et al., 2006). It is important to note that programs that participated were all center based were required to follow the same meal patterns that both the National Association for the Education of Young Children and the California state licensing standards mandate. To make matters worse, research has found that center based child care programs are the most strictly monitored, when compared to large group child care homes, and the least monitored are smaller residence based child care programs (Story et al., 2006). In sum, there is no uniform policy regulating the nutritional standards of non-parental group care setting for young children in the United States.
For any intervention program to be effective, the adults responsible for providing the food, regulating children’s eating behaviors, and modeling eating patterns must be targeted. Despite this, there have been limited primary prevention programs implemented in preschools that target center environmental changes, parent and teacher education, as well as policy changes. One program, Healthy Inside-Healthy Outside, was implemented in Florida and included early childhood education program intervention, parent trainings, and also teacher trainings. Program success was measured by 97% of the children maintaining a healthy weight trajectory and 4% of the children who were categorized as overweight at the beginning of the program were categorized as normal weight a year into the intervention. Parents who actively participated in the intervention had children who experienced the greatest gains in developing healthy eating patterns, as well as increasing physical activity. Additionally, parents who reported greater satisfaction with the intervention implemented more changes at home. These children spent the majority of their days at the childcare centers; however they still played a large role in the success of the intervention. This validates the need to include parents in interventions regarding children’s eating patterns. Another key finding of this intervention was that all center menu changes were revenue neutral, implicating that an intervention like this program can be cost-effective. One limitation of this intervention was continuity of the children as they often left the program before the end of the year and there was also an unexpected closure of a center that was serving as a control. Another limitation of the intervention was the use of parent reported data for the children’s nutrition and activity information as they may have introduced social desirability bias (Adams et al., 2005).

The limited research on the role child care settings play in impacting obesity finds that not only are parent interventions lacking or incomplete but teachers are inadequately trained to
Running head: NUTRITION POLICIES AND PRACTICES IN EARLY CHILDHOOD

promote healthy eating. For example, in a study by Freedman and Alvarez (2010) only 39 percent of teachers reported that they let children determine how much they should eat and 59 percent communicated that they enforce a rule of children completing their meal before receiving dessert. Research has found that these exact practices are highly detrimental to establishing healthy eating patterns for children (Gortmaker et al., 2006).

In consideration of the associative learning process, child care programs should aim to create a positive atmosphere while offering healthy snack choices. Acknowledging that mealtimes are a social occasion for children, childcare programs should offer snack and lunch in a pleasant, aesthetically pleasing context. While children in group care spend their days among one another, rarely do they gather together for a shared purpose. Family style dining is an exception to that. This way of dining, where a group of children come together to eat a shared meal, often tends to be a more culturally accurate representation of how people eat and therefore a very valid way to approach mealtimes in group care settings. It is recommended that children as soon as they are able to get into and out of a chair on their own are invited to sit at the table together. Should children over or under serve themselves, caregivers should be seated with them and help scaffold the process. There is only one bowl of a particular food available, hence, children practice waiting with adult guidance as well as learn how to pass the bowl to their peers when they are done serving themselves. Among other things, this particular practice allows children to practice their emerging abilities of perspective taking (American Academy of Pediatrics & American Public Health Association, 2011). Food should also be presented to children in an appealing manner. Tablecloths, little jars or vases with flowers, and real utensils and plates should be utilized. The mealtime experience should mimic a collective, family dining experience more than an individualized, cafeteria atmosphere. Consequently, program policy
should encourage family style dining and pay close attention to the context in which food is presented to children.

To support the development of healthy eating habits for children, early childcare programs should give staff regular and consistent training on research based practices for caregiver interactions and nutritional content. For example, programs should aim to give young children repeated opportunities to sample healthy foods in a positive, non-coercive context. When adults coerce children to eat a food and as a result receive a tangible reward, for example, if an adult encourages a child to eat their carrots and if they do so they will get a sticker, children are less prone to like that food later. Accordingly, asking a child to eat other foods first can create a coercive or negative context, which can then influence the child to dislike the foods. Thus, while caregivers should monitor the foods that the children are served, it is important to not they should not choose the order in which the children eat them.

As cited previously, research has found that “imposing stringent controls can increase preferences for high-fat, energy-dense foods, perhaps causing children’s normal internal cues to self-regulate hunger and satiety to become unbalanced” (Gortmaker et al., 2006, p.17). Whereas early childhood program best practices should allow caregivers to have clearly defined roles in offering food to the children while allowing the child to maintain the responsibility for deciding what and how much they would like to eat. A child, for instance, may want repeated servings of rice but a caregiver may intervene and bring attention to the fact that they have other choices on their plate as well.

Early childhood programs need to heighten their focus on instilling healthy eating habits in young children. Research has demonstrated that nutrition programs implemented in early childhood programs are cost-effective and serve valuable venue in making long-term changes in
children’s health eating habits. Good nutrition in school improves a child’s learning ability and overall welfare and, ultimately, determines the nutritional trajectory for a child’s lifetime. However, nutrition is frequently not a core subject in early childhood education. Subsequently, it is recommended that early childcare programs add the aforementioned systemic data driven measures regarding children’s access to high quality nutrition in the form of menu changes, the mealtime environment, parent and staff training on interactions and nutritional content to ensure that children are served healthy, nutritious food and beverages during their time in group care. This study provided best practices for implementing these changes in an early childhood education program.
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http://dx.doi.org/10.1016/j.bodyim.2008.03.003


The effects of educational decentralization on school expenditure and student outcomes: Longitudinal evidence from Korea

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Abstract

Educational Decentralization has been a primary interest among policy-makers for prolonged period in South Korea. During the last two decades, there has been a major sequential policy alteration on how to elect a school superintendent from appointment to direct election. The election method has been changed twice in order to empower constituents to elect their school superintendent from appointment to direct election through indirect election. This transition from appointment to direct election means that constituents gradually had more authority to decide in their position in terms of local educational issues. For this reason, this change can be accounted as the expansion of decentralization. This paper attempts to investigate the effect of educational decentralization on education expenditures and outcomes with empirical evidences from South Korea.

This paper is based on two models of studies investigating the effect of change of election method on performance achievement of organization, and the two models shed light on different theoretical explanations of expected results. One of them, voter maximization model actually indicates that educational decentralization has positive effects on both expenditure and performance achievement, while median voter model obviously shows that
educational decentralization has little effect on both expenditures and achievement.

For estimating the effect of educational decentralization, we utilized the variation of implemented superintendent election policies among 15 local education government (LEG) agencies. It was possible to use this variation because that each LEG had differently applied their superintendent election policy. We used LEG level panel data and applied a variety of econometric approaches, including fixed effects model to control the unobserved characteristics of each LEG and year specific effects. We also conducted Difference-in-Difference (DID) to check the additional robustness of results. Our data contains information on 15 LEG agencies from 1989 to 2011 over 23 years. We used ‘Statistical Yearbook of Education’ which has been published by Ministry of Education (MOE) in order to gather primary variables and compose macro data which were used for analysis.

Our most important finding from these analyses indicates that political initiative of educational decentralization, superintendent election policy, has little effect on both education expenditure and educational outcome, supporting that median voter model has more persuasive and comprehensive approach to explain the effect of educational decentralization in South Korea context.

This result is able to be explained in two perspectives. First, the major political momentum of educational decentralization has been generated by MOE, which has directly planned and implemented the greater part of educational policy. Even though educational decentralization is important policy issues for strengthening LEGs’ right of decision-making, the policy was also enforced by MOE without appropriate consideration of the condition of LEGs. This means that LEGs did not fully understand the fundamental purpose of educational decentralization and experienced gap between reality and ideals of the policy. Second, LEGs do not have financial condition for autonomous implementation of their own policy. In terms of educational finance system, the contribution of LEG on the total amounts
of school revenues is limited, while MOE has been supporting LEGs with a huge amount of educational budget. Furthermore, it is difficult for LEGs to spend their budget in self-regulating way because greater parts of total budget is usually spent for teacher salary, school operational expense, the cost of national education program.

The significance of this research is to investigate the effect of educational decentralization on educational expenditure and outcome in the context of South Korea. The results of this paper emphasize that the effect of particular policy like educational decentralization should be considered in their unique context. This research especially emphasizes the necessity of understanding on who has the authority to decide educational policy and how structure educational finance system is.
College Student’s Perceptions of Living and Learning with Attention Deficit Hyperactivity Disorder (ADHD)

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COLLEGE STUDENT’S PERCEPTIONS OF LIVING WITH ADHD

Abstract

This article examines the K-12 experiences, including special education, of three college students diagnosed with ADHD during their early elementary years. In their own words, they provide insight into what benefitted them and what educators can do to prepare children with ADHD to have a successful post secondary experience.
For many years, it was believed that the characteristics and symptoms of ADHD would abate as a child grew, matured, and reached adulthood. ADHD is a life-span disorder. It does not go away; it simply evolves as one grows older (Kolberg & Nadeau, 2002). Practitioners are increasingly noting adults who exhibit debilitating inattention but are not hyperactive (Kolberg & Nadeau, 2002; Resnick, 2000). All too often the one left out of a debate and discussion about a disability is the person living with the diagnosis, who can be viewed as a victim that needs to be cured of his or her affliction.

According to Goldstein (in Kolberg & Nadeau, 2002), ADHD is a condition affecting individuals differently, but consistently, throughout their life spans. According to a Mayo Clinic study, children between 5 and 19 have at least a 7.5% chance of being diagnosed with ADHD, which amounts to nearly 5 million children and adolescents (Szegedy-Maszak, 2004). Some estimates place the number as high as 20% (Resnick, 2000). There is a consensus that the core symptoms of ADHD affect a significant minority of the adult population as well (Kolberg & Nadeau, 2002). Fairweather and Shaver (1990) and Schnoes et al. (2006) found that many students with disabilities fail to successfully compete academically or simply vanish from college rolls within the first two years of enrollment in a postsecondary institution.

Purpose of the Study

This study focused on educational experiences of three young adult students, diagnosed with ADHD, who were attending a mid-sized state university located in the upper Midwest. Two of the students, Mark and Katie, had been diagnosed with ADHD during their elementary education years, the third student, Jenny, was not diagnosed until her freshman year of college. Specifically, this research addressed the following four questions:
COLLEGE STUDENT’S PERCEPTIONS OF LIVING WITH ADHD

1. What has the K-12 educational experience been like from the perception of a postsecondary student diagnosed with ADHD?

2. What are the skills, abilities, and attributes a postsecondary student diagnosed with ADHD views as valuable and worthwhile for a successful college career?

3. How can the postsecondary educational experience be strengthened and improved to insure greater success of students diagnosed with ADHD?

4. What lessons can be learned from the voices of students diagnosed with ADHD for teacher preparation programs?

**Methods**

In this study the method of data collection was three intensive interviews. In the first interview participants were asked to describe their educational experiences from K-12 (Table 1). The focus of the second and third interviews was the participants telling their stories of living with ADHD. The final interview also focused on skills valuable for a successful college career (Table 2 & 3). Additionally valuable assertions evolved through the interviews regarding lessons learned from the voices of students diagnosed with ADHD for teacher preparation program (Figure 1).

**Table 1**

Perceptions of K-12 Educational Experiences From Postsecondary Students Diagnosed With ADHD

<table>
<thead>
<tr>
<th>Mark</th>
<th>Jenny</th>
<th>Katie</th>
<th>All Three Young Adults</th>
</tr>
</thead>
</table>

4
Table 2

Skills, Abilities, and Attributes Students Viewed as Valuable for a Successful College Career

<table>
<thead>
<tr>
<th>Found comfort in knowing his mother would request teachers from year to year based upon his mother’s knowledge of ADHD</th>
<th>Found it beneficial that her parents provided homework support by reading assignments to and with her, reviewing subject content before tests, and purchasing supplementary material.</th>
<th>Found her parents regularly attending Individual Education Plan (IEP) meetings and visiting the classroom was beneficial</th>
<th>Found guidance and encouragement of parents and school personnel critical to developing socially, and emotionally, and encouragement to succeed in postsecondary education also helped</th>
</tr>
</thead>
<tbody>
<tr>
<td>Found the Special Education teachers’ resource room beneficial for completing assignments</td>
<td>Her lack of a diagnosis during her K-12 experiences excluded her from Special Education services which might have been helpful</td>
<td>Expressed concern that teachers must find a balance between monitoring and guiding her progress by giving her responsibility for her own actions</td>
<td>Found support from parents and teachers for repeated episodes of forgetting assignments and schoolwork</td>
</tr>
<tr>
<td>Relied on Special Education teacher to help negotiate accommodations needed</td>
<td>Felt like she was left to struggle and navigate the educational landscape on her own</td>
<td></td>
<td>Found support from parents with homework, communication with teachers, and through reassuring messages</td>
</tr>
<tr>
<td>Unconvinced that it prepared him for postsecondary independence</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Expressed concern that teachers must find a balance between monitoring and guiding her progress by giving her the responsibility for her own actions</td>
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</tbody>
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<th>All Three Young Adults</th>
</tr>
</thead>
</table>

5
| Selecting the optimum study environment that was void of distractions | Learning to utilize services of the university Disability Support Office to get additional test time, a quiet environment for test taking, and assistance in comprehending textbooks | Securing a single dorm room where she could structure her study environment to meet her needs | Not skipping class, completing homework prior to all classes, and sitting in the front of the room |
| College freshman need to advocate for themselves | Utilizing the university’s peer tutoring system was beneficial | Utilizing the university’s peer tutoring system was beneficial | Continued to use skills they developed in K-12 experiences |
| Being willing to seek help from professors and peers when assignments were unclear | Having to be persistent in asking professors questions regarding assignments or course content is important | Having to be persistent in asking professors questions regarding assignments or course content is important | Finding classes that have cooperative learning experiences, group work, and hands-on learning embedded in them |
| Utilizing the Disability Support Office for assistance | Prepared for tests by finding a peer to quiz her much as her mother did throughout her K-12 experiences | When possible, sought out professors who had classes that include experiential and cooperative learning in them | Spend an average of three to four hours a day on course related assignments |
| Continued to complete homework as soon after class as possible, a skill developed in the high school resource room | | | |

Table 3

*How Postsecondary Experiences Can Be Strengthened and Improved to Insure Greater Success of Young Adults Diagnosed With ADHD*

<table>
<thead>
<tr>
<th>Mark</th>
<th>Jenny</th>
<th>Katie</th>
<th>All Three Young</th>
</tr>
</thead>
</table>

6
| Good advisement for freshman and sophomore students | Professors should not make students feel “dumb” and uncomfortable when students ask teachers to repeat answers for clarification | Professors should not make students feel “dumb” and uncomfortable when students ask teachers to repeat answers for clarification | Professors need to read the disability statements given to them by students |
| Was given an “advisor access code” over the telephone instead of face to face without looking at schedules or checking for progress | Seek out professors that have a “little humanness” to their classes | Have properly trained peer tutors. Visiting a peer tutor can be both “intimidating” and “overwhelming” because of the very nature of the situation; one peer knowing the information and the other not knowing the information | Professors need to take the time to understand students diagnosed with ADHD |
| Successful learning experiences with professors who made personal connections, fostered a sense of community through cooperative learning | Professors need to provide a fair and equal opportunity for all students to succeed | Improved collaboration with postsecondary institutions at the transition meeting | Professors need to hold students accountable by taking attendance and going over homework assignments in class |
| Improved collaboration with postsecondary institutions at the transition meeting | | Education about “at risk” students at the transition meeting | Professors need to make an effort to know students’ names |
| | | Trained peer-mentors available | |
| | | Provide financial aid for students with ADHD | |

**Figure 1**

“Assertions” That Evolved from Responses Related to Research Question 4
Research Question 4 asked, “What lessons can be learned from the voices of students diagnosed with ADHD for teacher preparation programs?” The following assertions emerged from data analysis:

- Provide staff development for postsecondary faculty regarding implementing adaptations and accommodations for students with disabilities. Lehmann et al. (2000) suggested rewarding faculty who are willing to adapt instruction to address the learning needs of students.

- Creating a better collaboration between secondary and postsecondary educational institutions would be beneficial to individuals diagnosed with ADHD. McGrath-Kato, Nulty, Olszewski, Doolittle, and Flannery (2006) reported that some universities in Oregon are hosting one-day Postsecondary Academies for high school juniors and seniors with disabilities and their families to familiarize them with the campus and provide a range of workshops (many led by postsecondary students with disabilities).

- IDEA requires that all identified students who qualify for special education services have a transition meeting before graduating from high school. Both Mark and Katie suggested improved collaboration with postsecondary institutions regarding this meeting. Mark was not even aware the university had disability services, and Katie was unaware of a special program for at risk students; therefore, she was placed in courses that were so difficult and frustrating that she withdrew from the courses.

- All participants reported the need for better-trained peer tutors to work with students with disabilities. Zwart and Kallemeyn (2001) indicated that peer tutoring and mentoring can be a successful program for students with ADHD and learning
disabilities. A peer-mentoring program at the University of California, San Diego (Ellis, Gimblett, & Witztum, 1997), was used to help retain high-risk students with disabilities during their first year of transition to college.

• According to Lehmann et al. (2000), for postsecondary students with disabilities, time is limited by constraints related to their disabilities. Providing financial aid for students with ADHD so they can concentrate on their studies and not a job would provide ADHD students with incentive to seek higher degrees, encourage self-actualization, and encourage students to respect their study and tutorial time.

• During the freshman year, advising could be administered from a disability office and faculty advisors who are better trained and able to work with students with ADHD and other learning disabilities could be recruited to advise disabled students. Lehmann et al. (2000), McGrath-Kato et al. (2006), and the National Joint Committee on Learning Disabilities (1994) stressed the need for students with disabilities to become more proactive and learn to “take charge” of their educational experience. Advisors should require students to prepare a schedule and list of questions before coming to advisement meetings, and advisors should take extra time to have students reiterate program requirements to their advisor.

**Recommendations**

Teacher preparation programs should emphasize ways to help students with ADHD to develop metacognitive and self-actualization skills. According to Long and Bowen (1995), actively including students in planning to meet their educational needs will foster a sense of ownership and responsibility that will increase their potential for academic success.
Future educators should be exposed to developmentally appropriate educational practices and be encouraged to teach with an open-minded approach focusing on student learning and not student compliance to inappropriate practices. Ruschko (1996) stated that the traditional classroom requires of the student with ADHD everything that he or she is not good at: sitting still and not talking, concentrating on skills work, and not acting or speaking impulsively.

Group work, collaborative ventures, and the building of a community of learners should be emphasized as critical accommodations necessary for the success of all learners. Katie and Jen emphasized how working in small groups not only made it easier to participate but also helped them make new friends when they moved from one school district to another. Working in groups helped Mark take responsibility and be accountable to his peers as well as the teacher.

References


COLLEGE STUDENT’S PERCEPTIONS OF LIVING WITH ADHD


Acting as a Tool for Personal Development

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Abstract

In Thailand, currently there is a growing demand for personal development both at the individual level for personal communication and at the corporate level for business growth. At the same time, there are various forms of personal development training courses on offer ranging from personality development which focuses on personal appearance presentation and social etiquette, to coaching session i.e. Neuro Linguistic Programming (NLP) which focuses on the relationship between the neurological process, language and behavioral patterns learned through human experience which can be changed by setting a specific goal in life.

This research is to examine how acting as a form of art education can be used as a successful tool to cultivate the ‘true’ and ‘real’ personal development. By using the first hand experiences from the author who uses acting to help several individuals and corporate staffs for their personal growth e.g. lawyers, company administration staffs, and business owners. The outcome is by using acting as a main method for the personal development; the workshop participants find their ‘true’ selves and identities and are proud to bring them out in order to confront everyday personal and social conflicts. Imagination, concentration, self-exploration and presentation with truth are the main methods used with all acting exercises and are the key strategies of the success in using acting as a tool for personal development.
Acting as a Tool for Personal Development

Amidst the highly competitive market of training/coaching for personal growth in Bangkok business corporate environment, this paper is to reveal on how acting techniques can be used as an alternative methods for the same purpose. More importantly, with its holistic approach combining between mental-psychology and physicality, acting training as an art education can enable the training participants to discover the truth of themselves, to find their true identities and happiness, and be able to search for the freedom of their souls. This is the practice-led research in which the researcher who is a professional actor and acting teacher has conducted classes on using acting training for personal development for non-actors with numerous business oriented corporations in Thailand both at the regional level and in Bangkok e.g. advertising agencies, entertainment business enterprise, and construction companies etc. For this research, the case study is from the workshop in 2014 that the researcher conducted with 6 young talented Thai lawyers from one of the most reputable and famous global law firm in Bangkok.

Theory of Acting Training

There are several approaches in acting training. The varieties depend on the genre of performance, the socio-historical period of then show and the philosophy behind the artistic production. Nevertheless, the acting training which can be applied for personal development for non-actors is the realistic acting method for modern drama in which the acting philosophy is the “ability to create complete reality while on a stage” (Easty, 1981). Acting in this case is treated as the art of achieving reality in which presenting, impersonating, indicating, pretending, and pantomime is all disregarded. Constantin Stanislavsky is the founder of the realistic practice of acting theory and training. He not only turns the art of acting into a system of practice through exercise, improvisation and rehearsal, but he also believes that actors must train their instruments holistically i.e. mind, body, being, thought, emotions, imagination, sensitivity, awareness and honesty. Stanislavsky believes that “mind and body represents a psychophysical continuum” and “emotion never exists without physical consequence” (Carnicke, 2000). In order to act realistically, for Stanislavsky, actors must create a living human being on stage with all complexities of the character. In other word, there is no such thing as ‘acting’ but only ‘being’ a role.

The main assumption of his acting technique is to help actors “develop a state of mind and body that encourage “experiencing” (Carnicke, 2000). In order to succeed, actors must prepare themselves before training through all body relaxation since physical tension is the greatest enemy in interfering the mind’s ability to focus and imagine. Once the body and mind are prepared and focus, actors will; automatically activate their subconscious in which the sense of ‘experiencing’ will begin instinctively.
In Stanislavsky’s system, there are 2 groups of exercises. The first is the techniques that “foster a proper ‘sense of self’ and hence induce in the actor creative state of ‘experiencing’” (Cornicke, 2000). The latter is the methods to approach the creation of the character successfully. In using acting training for non-actors, only the first group of exercises is used in training. Under this circumstance, the personal development workshop participants are treated as actors who basically trained to develop ‘sense of self’ by learning to control skills of ‘concentration, imagination, and communication’. The philosophy of acting here is to represent the truth in which to be truthful to any character one must act; he or she must firstly be truthful to his or herself. Acting is thus the self-exploration, a mean to find new qualities of his or her own individuality.

So as to successfully develop the sense of self mentally and physically, the 5 senses of human being must be sharpening through observation and detailed exploration i.e. sight, hearing, touch, smell and taste. To succeed the participants must be explored these 5 senses with full imagination beyond their daily lives’ familiarity and reach out from their comfort zone. Additionally, Stanislavsky added the 6th sense which is emotional memory or affective memory. This is to work psychologically into the participants’ minds by making them recall a moment of various emotional events in their lives e.g. joy, sadness or ecstasy etc. Later on, Lee Strasberg, one of the founders of the Method Acting, has worked and developed this latter method into greater details (Krasner, 2000).

The Experiment

The workshop was conducted in 2014 for the period of 1 month on every Sunday, 8 hours per time, and 32 hours in total with 6 participants i.e. 3 men and 3 women. The participant ages range from early twenties to mid thirties. They are young hopeful and talented lawyers from the famous international law firm based in Thailand with the top ranked salary of their ages. They are Bachelor’s degree graduate with distinction from top universities in Thailand and Master’s degree graduates from ivy-leagues universities in the US or highly acclaimed higher institutes in the UK. Their boss send them to the workshop not exactly know what this training is about and what acting training is. However, his main objective is to build a good dynamic working team among the young lawyers where everyone participates and enjoy working together in which that environment seems lacking and most of these lawyers choose to be quiet and passive. Group dynamic and good communications thus never emerge in this team.

On the first workshop day, participants scared of the word ‘acting’ as they assume that they have to act or be someone else in this workshop. Therefore, the first few hours are spent on introductory talk on how acting training is used to cultivate the ‘true’ identities and individualities of human being. The researcher as the workshop leader gave the rules of whatever
they do and whatever actions they take is no ‘right’ or ‘wrong’. All participants must not be judgmental in order to initiate the true sharing environment in the class and they must be expressive with truth, be spontaneous and instinctive, and stop being too logical and intellectual, since this is the ‘play’ time.

**Relaxation**

The whole session was started on body relaxation. Hatha yoga which is the practice of yoga poses led by the breathing control is used as the main method of body relaxation. Each movement is designated by the in and out breathing. This is not only to stretch, relax and build strength for body, but by focusing only on the rhythm of in-out breathing, the mind is also now concentrated, still and full with awareness.

**Melt the Ice, Trust and Group Sharing and Sub consciousness**

In order to melt the ice within the group and initiate the participants to be at the subconscious level, the highly-energized exercises of walking and movements are used. The participants are to follow the order of ‘roll on the floor, walk, run, laugh, jump and sleep’. However, when they follow one order they must move from one place in the room to whatever focus that they see at the eye-level sight in the opposite direction, at the same time, they must conduct each order under the number which designated the degree of fast or slow movements e.g. run at 20 is faster than run at 10 or walk at -10. The multi-tasking orders force them to work at the subconscious level as there is no time to think or plan. The highly demanding physical movement make them exhaust and not trying to well-behave like when they first entered the class. As a result, they start to release themselves, in which fun, enjoyment and laughter appear as the emotional outlet from the game playing.

Later on group sharing and trust building exercises are used in which the participants are to walk all over the room and without looking at each other or signaling among the group members, they must find the moment that they will stop moving altogether at the same second. From the observation, one can see the structure of the group. In the first few rounds, there will always be someone who leads the stop moment and that are the current group leader either by seniority or natural characteristics. On the contrary, there will also be the followers, those who wait to follow. Thus, the participants are asked to stop and close their eyes, and concentrate on their breathing. Once they are ready, they are asked to find the way to stop together with no leader and no follower. One hour passed then they finally succeeded. In the discussion, they discovered how group sharing and trust can be built through listening, interpreting then group
rhythm, blending themselves into the environment with full awareness and stop using the familiarity of their daily lives’ characteristics i.e. leader and followers.

**Senses**

So as to sharpen the 5 senses, the participants were asked to lie on the floor with eye close and focus only on their breathing. The workshop leader then uses the exercises that explore combination of senses e.g. sight and sound. The participants are asked to see the color of ‘white, yellow, red, blue, brown, green and black’ with their eye close. In seeing each color in their imagination, whatever shade is fine and whatever shade that appeared in the first glance, they must explore and play with it. In exploring each color, the participants are asked to see ‘for the first time’ once they fully see, they must touch the color ‘for the first time’ once they know how they feel with each color through the first touch, they must walk into that color and see themselves transform into the specific color ‘for the first time’.

In this exercise, the participants are asked to see, to touch and to be the designated color ‘for the first time’. In see these colors, for each participant there always is the color that they are more and/or less familiar with. For the color that they are not used to or dislike or cannot see, forcing them to see is to push them beyond their boundaries of familiarity and comfort zone. To force them to conduct the action of seeing, touching and being for the first time is to enable them to be fresh, sudden and unprepared in which conducting the action instinctively and subconsciously emerged as a final outcome.

The senses exercise is thus used to create imagination, concentration, sharpening sense of human being and most importantly for the participants, to learn to take risk by going beyond their comfort zone.

**Imagination and Creativity**

The group is put into the circle and all standing up. The leader called this exercise ‘molding the air’ in which it consists of 3 steps of action i.e. making, using and sending objects to other group members. Whoever that receives the object must firstly destroy it then follow the 3 steps of the game. The purpose of the game is to make the group use the imagination, concentration and creativity in ‘creating’ the object. Then make the ‘belief’; in using the object as it really is. Then transfer the object into the other group member, who receives it and destroys it as it is in which this is a ‘communication process’. In making the exercise fun, the rhythm of the game must be fast. Each participant must not plan or take long time to create
object. He’ She must create it spontaneously, and using it realistically and believably in others’
eyes. Then send it through.

The most important issue here is how the participants can believe in their own imagination, and are able to communicate their belief to others and use their creativity spontaneously with the sense of play and relaxation.

Sharing and Story-telling

This exercise is used when the workshop had been conducted for sometimes in which the participants start to trust each other enough to share their stories. They are asked one week in advance to prepare the talk on their selves i.e. introduction of their lives, value of themselves, passion and objective in their lives. The ground rule here is there will be no judgment so there is no need to appear smart, witty, and sympathetic or cute. They have to tell the story of their true selves and be who they really are. In this exercise, the observation is so clear that who is ready to be open-up and who still choose to be in the comfort zone. What came out from this group is that they all have common family background with certain strict social codes of conduct i.e. being good kids, good students, getting good jobs in the prestigious company and getting rich as the end result. When asked about what they valued or were passionate in life. Most of them had no answer since they never thought of it. Some would have real passion of being rich so the family can be proud, or their objective is to build several ten million baht house for their mum.

Under this circumstance, it can be seen that their happiness is either led by the materialistic perspective or depended on other people’ judgments. When asked about what is their true happiness if one put his or her happiness in other people’ hands, they were stunned. For Thai culture, kids are expected to be loyal, grateful and gratitude to their parents. But often with some parents that have strict sense of ownership impose on the kid’s lives. The kids grow up within their own cell, never find their true happiness nor are independent. Many were brought up into limited freedom, since they have to conform to social, family, working life norms in order to be accepted as being ‘good’ and ‘proper’. As a result, true happiness and freedom has never been discovered in their lives. They then turn to find happiness in the most extreme opposite way superficially and materialistically as spending money on consuming extravaganza luxurious products for status, drugs and alcohol addiction or immoral love affairs in order to fulfill the happiness lacking in their lives.

In the discussion, the group spent long hours discussed about how one can find happiness in their own souls, regardless to the use of materialism. They came to term that the true happiness is only when one gain true freedom of their own souls.
The above are the examples of each category of exercises that participants were trained in the periods of one whole month. When time passed by, exercises that were brought in for each category could be more complex with high requirement of honest expression, imagination and creativity, risk taking and the comfort zone destruction, with greater emphasis on the last category of the psychological exercise.

**Result**

At the end of the workshop, the participants were asked to write as journal of their concepts of complete human being and its relation to their lives. In their writing, many were able to compare the pre and post workshop being and experience of themselves, and how they started to see their lives changing. Many can reflect the ways they were brought up in social conformity and how it limited their individualities and freedom. Many find the state of mind and body that will enable them to confront problematic issues and to take risk. Many find who they are at the subconscious level when they are brave to disregard the judgment of others. Above all, they found out that working in the corporate lives in the highly competitive environment with immense judgment from colleagues, customers and bosses are the process of ‘dehumanizing human souls’. The more important question here is if every corporate is the same, how one can be in the workplace and still be happy and stay true to their souls. Every of them have their own answers. All knows how to be true and honest to their own happiness. However, not everybody is brave to do that. Several admits that they will not choose that path since the risk is too high, and they prefer playing safe and be satisfied with temporary happiness they get. But some did and one of the participant resigned one month after the workshop ended, to work in the Thai company with less pay but possibly more freedom.

Acting training can reveal how people can find their freedom and true happiness. However, the training cannot change the attitudes since it is the personal choice they make in lives.

**Conclusion**

Acting training for personal growth with its holistic approach reveals how one can find true happiness and freedom of the soul. The overall process is to work synchronously with body, mind, awareness, instinct, thoughts, imagination, creativity, concentration and honest expression. The philosophy behind the training is to bring back the participants to the state of being the ‘children’ again. When one was a child, all things are fun and there to be explored with playful attitude in which there is not right or wrong. The risks are taken all the time in games at subconscious level with honest expression since children disinterest judgment instinctively.
Therefore, the idealistic state of training is to work at the subconscious level where body and mind are focused and concentrated in which risk taking starts instinctively with honest expression. Self-discovery and freedom is finally emerged as a result of destruction of all social restriction.

Reference


Abstract: Project 2061 was created by the American Association for the Advancement of Science (AAAS) in 1985, the year Halley’s Comet last appeared; 2061 is the year of its return. Project 2061 addresses a continuing decline in science competency among U.S. students and aims to achieve science literacy for all Americans. Thirty years into this project, marked by committee produced studies, benchmarks, frameworks, and standards, U.S. student achievement levels remain unchanged. A summary and analysis of this project identifies systemic shortcomings: top-down revisions for K-12 science education based on the separate silos of knowledge endemic to university departments and academic specialization. This paper suggests an alternate, bottom-up organization founded on the most fundamental cognitive endowment of the child: narrative comprehension—the universal ability of all humans to understand and remember what is embedded in story. We begin Grade One science with a refrain: *Stories We Tell All Children*. Children discover that the initial letters (*S W T A C*) stand for the big story of the Universe in five chapters: *Stars, World, Trees, Animals, Children*. The children’s world is thus placed within a story which will later underpin an evolutionary narrative. This mnemonic formula assures these basic five chapters are easily remembered and recited. Building on this simple story, additional mnemonic stories are introduced in the second to fifth grades, each one expanding one of the five chapters. Scientific exploration and discovery is thus placed within a single narrative. This big-story narrative reaches full articulation around the sixth grade with an expanded eight-chapter version: *All Good Stories Earn Both Praise And Popularity*, the initial letters of which (*A G S E B P A P*) summarize the 13.8 billion-year history of the Universe—*Atoms, Galaxies, Stars, Earth, Bacteria, Plants, Animals, People*. Project 2061 themes and concepts are thus conveniently wrapped in a framework deriving from the way children learn.
Introduction

Thirty years of disappointing results from science education studies, benchmarks, and standards suggests systemic problems continually overlooked by their framers, committees, and sponsoring science organizations. It is time to reconsider the reasons for substandard performance of U.S. students on national and international assessments of science comprehension. Mediocre performance now appears to be locked in and immune to improvement efforts. New thinking is needed along with a radical overhaul of basic assumptions about how science education should occur. The following sections outline the history of the problem, some of its causes, and an effort at reframing K-12 science education based on entirely different assumptions.

Project 2061 Background and Progress

In 1983 the results of a 3-year study by The National Commission on Excellence in Education were published under the title *A Nation at Risk: The Imperative for Educational Reform*. Its appendices (NAR, 39-61) indicate that 10 public events (hearings and panel discussions) were held around the country; 44 commissioned papers were read; site visits occurred in 6 major metropolitan areas; and 282 presentations were heard. The report visited every aspect of education but our focus here is science education. The Commission found that “there was a steady decline in science achievement scores of U.S. 17-year-olds as measured by national assessment of science in 1969, 1973, and 1977” (NAR, 9). The first two dates correspond precisely with the high point in the American space program and 6 moon landings (1969-1972) that evidently did not increase interest in or attention to science; as the Commission noted, “average achievement of high school students on most standardized tests is now lower than 26 years ago [1957] when Sputnik was launched” (NAR, 8). This event shocked Americans; the nation was falling behind the U.S.S.R. Resources and funding for science education increased; the National Defense Education Act (1958) provided new levels of scholarship support for science and technology. Results should have been evident in assessments, certainly by 1977, but they were not. As Paul Hurd put it, “We are raising a new generation of Americans that is scientifically and technologically illiterate” (NAR, 10).
In 1985, the last year Halley’s Comet appeared, the American Association for the Advancement of Science (AAAS) launched Project 2061, its name signifying the next return of the comet in its 76-year cycle. Project 2061 was described as “a long-term initiative . . . to reform K-12 education in natural and social science, mathematics, and technology.” Its imaginative name symbolized a vision of its creator, F. James Rutherford, Executive Director of the Education Division of AAAS: many children who would benefit from this initiative might well live to see the return of the Halley’s Comet.

Intensive work by AAAS began on a state-of-the-art definition of science and its components, stimulated by a 1989 call for “voluntary national standards” issued by the governors of all 50 American states. The first Project 2061 publication, Science for All Americans (1989), reiterated ongoing concerns: “One only has to look at the international studies of educational performance to see that U.S. students rank near the bottom in science and mathematics—hardly what one would expect if the schools were doing their job well” (SFAA, xv). Science for All Americans, which is still relevant 25 years later, defined the goal of Project 2061: science literacy understood as “ways of thinking . . . essential for all citizens in a world shaped by science and technology” with the added benefit of “preparing people to live fulfilling and responsible lives” (SFAA, xiii).

Over the next seven years, the AAAS produced two more reports. The first, Benchmarks for Science Literacy (1993), carried a back-cover endorsement by President Bruce Alberts: “another milestone in the longstanding effort of Project 2061 to improve the teaching and learning of science for all Americans.” Its stated goal was “literacy in science, mathematics, and technology in order to help people to live interesting, responsible, and productive lives.” (Benchmarks, xi). Its method was carefully defined knowledge which children should be expected to know at specific grade levels. Kudos for Benchmarks were extraordinary: “landmark contribution . . . clarity, precision and thoughtfulness . . . no other document like it . . . it will have enormous impact.”

The second report, National Science Education Standards (1996), was prepared by the National Research Council (NRC) which assumed the goal of science literacy and set out educational structures “designed to enable the nation to achieve that goal” (NSES, ix). Its territory was broad based standards for teaching, for professional development of science teachers, for assessment, and for science course content. Its course-content focus was “science as
inquiry” which was treated not only for physical, life, earth and space sciences but delineated for each of these sciences in separate sections devoted to grade levels: K-4, 5-8, 9-12.

These three publications appear to cover every component of Project 2061 by defining science, establishing benchmarks for the acquisition of science through K-12, creating broad-based educational standards, and laying out a unified vision of the task ahead: addressing mediocre assessment scores and achieving science literacy among the American people.

Within a few years, educators realized that progress toward that goal was minimal to nonexistent. The imagery in the title of a massive National Academies report, Rising Above the Gathering Storm (2005), captures the sense of desperation that had set in but its 590 pages of recommendations appear to have had little impact. Five years later the opening sentence of the International Science Benchmarking Report (2010) released by Achieve stated, “U.S. students have consistently lagged behind their peers in other nations on international science assessments” (ISBR, 2)—a near verbatim repeat of A Nation at Risk 27 years earlier. Bruce Alberts had been following earlier revisions in his role as president of the National Academy of Sciences (NAS) as far back as 1993; as President of AAAS in 2010, he summarized the previous two decades of Project 2061: “The results have been disappointing. In particular, the requirement for students to master a large number of facts and concepts took precedence of the strong emphasis on ‘science as inquiry’ in the NSES” (Science, 30 July 2010). This defined the need for the new initiative of A Framework for K-12 Science Education already in draft form on the Internet for public response. Cautiously, Alberts hoped that the Framework would “overcome this problem in several interesting ways” but when it was finally published (2012), J. Coffey and Alberts wrote with considerably less enthusiasm that it “contains a vast number of core disciplinary ideas and sub-ideas, leaving little or no room for anything else,” an echo of the 1989 judgment that “the present curricula in science and mathematics are overstuffed and undernourished” (SFAA, xvi). Given two decades of disappointing results, they advised that science teachers from all around the country and all levels of education should convene “to bring ground truth to the NGSS” by sorting, prioritizing, and reducing the topics to basics that could be covered in each school year (Science, 18 January 2013). This was proposed as a pre-task undertaken before the main task of designing curricula and classroom lessons, which work is constitutionally left up to state agencies, regional school boards, and teachers.
Project 2061 publications were not alone in judging science curricula as overstuffed and undernourished. In the massive Association of American Colleges and Universities (AACU) *Handbook of the Undergraduate Curriculum* (1997), science course content was described as “too much, too detailed, and mostly too unimportant. One can learn this content and yet remain uninformed about it” (Handbook, 289). The restatement of this fundamental problem two years after it was first voiced points to a systemic problem which persists through one revision after another.

Coffey’s and Albert’s proposed sorting and prioritizing did not happen; the *Framework* as published became the foundational document for *Next Generation Science Standards* released in 2013. *NGSS* is now in the public arena with hundreds of teachers struggling to translate its framework and standards into year-long grade-appropriate curricula, meaningful educational units, and effective classroom lessons. Teachers who undertook this work in the past two decades with little to show for it now look to a new generation of educators who are pinning their hopes on the latest reorganization of science education. Meanwhile, 30 years into Project 2061, little has been accomplished. The same problems remain, with no one quite sure just what they are.

### Why This Continuing Failure?

The most difficult aspect of addressing problems is recognizing the assumptions endemic to the problems. We tend to address content, and science curriculum reform has been primarily directed at defining science content. But content always comes bundled; science is packaged as discrete subjects, separate silos of content. The emphasis on “science as inquiry” has encouraged overzealous inquiry in all directions rather than an effort to curtail the subjects of inquiry and develop a strategic approach that aims to produce an attitude of inquiry as a foundation for a transferable skill.

However, other problems are evident. These are clear from *Benchmarks* (1993) where acquisition of specific information was defined for each grade level. This approach is even clearer two decades later in *NGSS*. Here, for instance are directives for education about the physical world at the K-2 level: “Students are expected to develop understanding of patterns and variations in local weather . . . to apply an understanding of the effects of different strengths of different pushes and pulls on the motion of an object . . . to develop understanding of what plants and animals (including humans) need to survive.” For the teacher’s edification, “the crosscutting
concepts of patterns, cause and effect, systems and system models . . . are called out as organizing concepts for these disciplinary core ideas” (NGSS, 2). This wording is wholly abstract; most adults, even science specialists, will need clarification with examples. Ironically, perspective can be had from Project 2061’s earliest discussions of learning: “Young people can learn most readily about things that are tangible and directly accessible to their senses” (SFAA, 199)—an insight evidently forgotten. The precise problem is that NGSS presents end-product abstractions, logical conclusions children should reach, and general principles of how things work without acknowledging that experiential correlatives of these are already being learned—before, outside, and beyond the classroom—and their abstract formulation is better left until later.

Consider, for instance, how much a preschool child has already learned about these abstractly defined ideas. By age two, she has learned about pushing and pulling with wheeled toys scooted across the floor and her wagon pulled around the living room—with more difficulty if the wagon is heavily loaded. Indeed, by two or three the child has learned as much about gravity as any adult will ever know. She throws spoons and cups from her high chair and balls across the room; she can reach from a couch to retrieve an object from the floor while keeping her center of gravity such that she will not fall. She knows she needs air, water, and food. When she runs, she knows she has to stop to catch her breath; when she is hungry or thirsty, she knows to ask for a snack or drink. She knows that her pet dog needs food and water too, and has probably learned that her family’s plants also need sunlight. By age four, she can sort and classify, as evidenced by her placing her books in the bookcase, arranging dolls on the couch, and putting clothes Mom has folded in their proper place in her drawers. The relation between action and event is clear from pushing buttons, turning keys, and flicking switches. By the age of five, the child has experienced numerous variations in weather: blue skies and cloudy skies, hot summers and cold winters, rain, wind, and snow. The abstract patterns and principles of these experiences, the concepts of cause and effect, systems and system models, and crosscutting concepts will emerge in time from still more experiences, not from limited lessons the classroom teacher can devise. As Science for all Americans puts it, “learning is not necessarily an outcome of teaching”; life experience is the teacher. “With experience, [children] grow in their ability to understand abstract concepts, manipulate symbols, reason logically, and generalize.” (SFAA, 198-199). One wonders how initial insights have been forgotten. Meanwhile, something else
should be going on in the classroom beyond any lesson a teacher might devise to teach “pushes and pulls.” Any determined attempt to draw abstract concepts and principles from lessons in the classroom is too much pedagogy and is likely to kill interest—one probable cause of continuing underperformance of U.S. students. What should be occurring in the classroom is a panorama of experiences, a virtual blizzard of new discoveries while leaving the abstractions to mature over time—with teacher assistance when experiences have multiplied to the point that organizing patterns have become obvious and unavoidable.

Clarifying the Origins of the Problem

As the abstract language quoted above suggests, a fundamental difficulty with the Framework and NGSS derives from their top-down formulation of benchmarks, frameworks, and standards. Every Project 2061 report or publication has been produced by a huge team of specialists—40 for Benchmarks, 150 contributing members for NSES; a committee of 32 for the Framework; and for NGSS, 41 writers from the National Science Teachers Association (NSTA), the National Research Council (NRC), AAAS, and Achieve. With few exceptions, most are prominent professors, deans, executive directors, and presidents of science organizations. Their assumptions derive from the academy—a limitation Project 2061 organizers seem to have missed. In the AACU Handbook of the Undergraduate Curriculum we find a telling analysis of “academic specialization and the persistent structure of curriculum.” Undergraduate and by extension K-12 curricula, are shaped by a “deeply rooted characteristic, the doctoral education of professors and administrators. The curriculum is based on disciplines, and the university is based on departments organized according to disciplines.” (Handbook, 114). The departmentalized specialization of Project 2061 designers is the most obvious reason why science curricula have grown out of control: as new fields rise to prominence in the academy, curriculum designers look for ways to add foundational topics to the K-12 curriculum. Organic chemistry, space science, ecology, genetics, materials design, nanotechnology—groundwork for each must find a place as early as possible in the educational process. Moreover, high-level concepts, structures, and models from these become the organizing principles (“crosscutting concepts”) informing K-12 education. The result is diminished attention to general education.

When we study Benchmarks, the Framework, and NGSS from the standpoint of the child being educated, crucial omissions are evident. The child’s experienced world is missing.
By turning over the details of curriculum to states, regional school boards, and teachers, the Project 2061 designers have left out the entire realm of concrete things upon which children build their knowledge with no hint that these are the primary territory for the child’s learning. While the Sun, Moon, stars and Earth are mentioned, there is no mention of any other aspect of nature bound to be experienced by a child almost daily. The imperatives of the benchmarks, frameworks, and standards establish themes, concepts, and abstractions as primary with no acknowledgment of the experienced world from which these will be derived. With this foundation missing and never mentioned, the teacher, who may also lack extensive understanding of how children learn, is left in a quandary.

The list of things missing is daunting and disappointing: household pets (cats, dogs, budgies, gerbils), common sights of the front lawn and back yard (grass, shrubs, trees, gardens, weeds), the entire world of insects (ants, spiders, grasshoppers, beetles), flying things (birds, bees, wasps, butterflies, moths), neighborhood animals (chipmunks, squirrels, raccoons), familiar garden flowers (roses, tulips, daffodils), wild flowers (primrose, paintbrush, daisy, sunflower, bluebonnet), and geographical sights some of while will be seen on vacation (fields, streams, hills, mountains, beaches, oceans). Exploration of nature is basic to primary education. Exploration of creatures, places, and things which are part of the child’s experienced world provides opportunities to discover the relationships between plants and animals, flowers and bees, people and parks, and between trees and stacks of lumber in Home Depot.

In light of these observations, we can perhaps summarize (in some cases with quotations) some of the systemic problems of current science education.

1 “The structure of higher education has been dominated over the course of the twentieth century by disciplines and departments” (Handbook, 396).

2 The framers and writers of Benchmarks, NSES, Framework, and NGSS are, with few exceptions, highly educated specialists—“nationally and internationally known in their respective fields” (NGSS, iv).

3 K-12 science frameworks and standards have been designed from the top down by academic specialists emphasizing subjects considered basic for academic specializations which segregate science into distinct knowledge silos.

4 The current framework and standards emphasizes STEM (science, technology, engineering, and mathematics); T, E, and M highlight the increasing pressure on universities to produce job-ready graduates competent in technology and engineering.
while the broader goal of literacy in science for all graduates, including non-science majors, is secondary.

5 Top-down structuring of curricula with emphasis on subject units that will prepare students for both traditional and emerging fields has resulted in science course content which is overloaded with detail tailored to specialization but of little importance for developing general science literacy.

6 Life experience as the primary educational context has been back-benched in favor of top-down curricula emphasizing themes, principles, and concepts with benchmarks, standards, and assessment instruments as criteria of success.

In keeping with a highly structured conceptual organization, science education reform has stopped short of actual curricular design. In fact, this is a stated policy; the translation of frameworks and standards into curricula and classroom lessons is assigned to school boards and teachers. While this seems logical and sensible—and in conformity with the assignment of curricula to states and regional school boards—it is fair to say that expert Project 2061 committee work has not reached full fruition because it has never achieved full curricular articulation. This reveals its weakness: nationally and internationally known experts in higher education—even those whose field of specialization is education—have focused on content, aimed at literacy, struggled to organize a coherent K-12 curriculum, but failed to address the most fundamental cognitive endowments basic to childhood learning. Indeed, if we read through the two-decade array of documents, we find virtually nothing on how childhood learning works. As a result, the missing component is a bottom-up organization which would start with the child.

Language, Stories, and Storied Time

In her inspirational book *The Absorbent Mind* (1949), Maria Montessori wrote, “The only language men ever speak perfectly is the one they learn in babyhood, when no one can teach them anything!” (AM, 6). This simple but remarkable observation has several important corollaries. Children learn language without being taught. Language is made up of words embedded in sentences learned in the context of the family. Mothers talk to their babies from the time they are born: “Here is your bottle . . . Mommy is cooking dinner . . . Daddy is coming home . . . Oh! Daddy just drove into the driveway.” Each of these simple sentences is a narrative, a story, with a subject and verb, and each one sets in motion a sequence we can call storied
time—baby actually drinking from the bottle, Daddy actually coming in the door, dinner actually being served to the family. When friends of parents visit, a different variety of stories about Baby emerges: “Yesterday she pulled the cat’s tail . . . this morning she took her first steps.” Here the sequence is reversed: events from the past sets in motion a spoken version in storied time. Either way, Baby lives immersed in an ocean of story. As Montessori noted, Baby cannot yet be taught anything directly but she soon understands the pattern, the correlation between a story in words and storied time. By age two, she understands virtually everything said. A child needs to be taught to read, add and subtract, write, think logically, and behave ethically but no teacher has the slightest idea how to teach a child how to understand stories. But she does not need to be taught this; narrative comprehension is her most basic cognitive endowment. Preliterate or educated, rich or poor, ancient or modern, every child comes into the world with this fundamental ability to understand stories. By age three or four she has mastered the use of narrative: she can tell a simple version of what she wants, what happened, or what is going to happen next. By age four she can retell a simple story she has heard—Goldilocks; Three Billy Goats Gruff—and by age five, she may be able to invent her own.

A corollary of narrative comprehension is pattern recognition. A child watching Baby TV at age two can watch train engines with eyes and a mouth talking while she is playing with a wooden train that does not have eyes and cannot talk. Driving in the car, the same child can see a full-sized engine with dozens of cars and correctly identify it as a train. The Baby TV train exists in storied time; playing with the toy train creates another storied time; the full-sized train is real. This recognition of things across several levels of reality—toys, cartoon representations, and objects themselves—is pattern recognition that defines narrative as a fundamental learning language and thus a basic pedagogical tool for all education. Put simply, narrative provides points of correlation with reality, and through pattern recognition, through multiple levels of reality.

Surprisingly, this most basic cognitive endowment plays no part in Project 2061; no reference to “narrative” or “story” as a pedagogical tool appears anywhere in Science for All Americans, Benchmarks for Science Literacy, A Framework for K-12 Science Education, or Next Generation Science Standards. This omission is so complete that it prompts pointed questions: Have doctorates and advanced specializations of the designers led them to focus on academic content as the main determinants of K-12 science education? Have these specialists
never noticed their own immersion in narrative as they follow team competition leading to the Superbowl or multi-episode serials on TV? Has pedagogy founded on how the child learns been considered, overlooked, or never understood? And finally, can we rebuild the whole edifice of science education on an alternate framework—on the child’s basic cognitive endowment of narrative comprehension? An affirmative answer will require, quite literally, an entirely new beginning.

A Narrative Framework for K-5 Science Education

What would a narrative framework for science education look like? Assuming several stories might be needed, certain requirements must be met. First, every foundational story must be simple: a child must be able to understand, remember, and even repeat it. At the same time, a foundational story must be comprehensive enough to lead children to explore every aspect of their world and to allow for everything discovered to fit into the story. Third, the simplest stories must be flexible and expandable so that children can follow their own learning progression to successive levels of understanding.

Grade One:

A few weeks into the first grade is an appropriate time to begin. By this time children have learned letters and some words and most are eager to learn more. Words hold secret meanings that adults understand and children want to discover. For children at this stage, words convey feelings of mystery and wonder; in early times, words had power to affect events, and they still do for the six-year old child. Written words have a way of “saying” the same things that spoken words say. Of course children are fascinated with things; they are intrepid experimenters. But wrapped into a story framework, interest in things should be linked to fascination with words.

Before starting, the teacher should make sure that the children are familiar with fifteen or twenty words, including ten needed for the first story. The child is about to begin learning science but the word “science” should be avoided; it cannot possibly mean for a child what it means for the teacher. (“Science” might well be left until the second semester or even a higher
grade.) The teacher’s introductory sequence requires three steps and these will be repeated many times through first grade, and again in higher grades.

The first step: The teacher promises to tell the children *Stories We Tell All Children*, and she writes these words on the whiteboard. Repeating this five-word formula, the teacher has these six-year-old children repeat it in unison, and they will be led to repeat it many times—at the beginning of each “science” lesson over many days and weeks. Within a few days, the children will know it by heart: Teacher is now going to tell us *Stories We Tell All Children*.

The second step: the teacher writes the initial letters from “stories we tell all children,” spacing them across the board: **S W T A C**. Now she performs a little legerdemain that will amaze any six-year old. She creates a new story beginning with these letters: *Stars, World, Trees, Animals, Children*. With each new lesson, the teacher repeats these three steps until the children understand that *Stories We Tell All Children* stands for another story: *Stars, World, Trees, Animals, Children*. A permanent classroom poster as a reminder would be appropriate.

The third step: a promise to tell the children a very big story to show what these words mean. The teacher points at the words while telling the following story:

“First there were Stars up in the sky, lots of them, and our Sun is our own special star. The stars shine bright at night and the sun shines bright in daytime. They all shine like fires in the sky because they are cooking, like Mother cooking something good in the kitchen. The Stars are cooking up all the stuff that the other things are made of. [Pointing, she goes on] The World, Trees, Animals, and Children are all made of stuff that was once cooked in the stars. So we must have stars. If we didn’t, we wouldn’t have anything else. After the stars and the Sun, came the World. We have to have a World first, before we can have [pointing] Trees, Animals, and Children can climb them, and we can feel cool sitting under them. Trees also give us apples and pears and bananas and peaches and lots of other fruit to eat. Animals need trees too. They eat nuts and berries from trees, and some animals live in trees. Birds live in trees, too. After Trees came Animals and then came Children. Children need animals for food. We eat beef from cows, bacon from pigs, and eggs from chickens. Cows give us milk, too, and also butter, cheese, and ice cream. So this very big story tells us how the Stars came first, then the World, then Trees, then Animals, and Children came last.”
With this big story, the teacher has created a narrative framework for the experienced world of the child. *Stories We Tell All Children* will be repeated, along with *Stars World Trees Animals Children* at the beginning of each lesson. After several repetitions, the children will know the words and understand the story, and this understanding will grow. Knowing the story does not mean that children can retell it—not yet—but they will understand how the story goes. The story includes a good deal of detail but a single goal: to provide a story framework for the everyday world. From it the child will come to understand the chronological sequence and hierarchical order of nature basic to science. Moreover, the groundwork has been laid for one of “the five biggest ideas in science”—evolution—mention of which will not come for several more grades. However, the story template is based on things every child can experience and understand. Repeated many times, this will provide a narrative organization for the child’s world while laying a foundation for the entire range of science to come later.

The second lesson is simple: after repeating the three-part introductory sequence, the teacher begins a systematic exploration of the five “chapters” of the story. Beginning perhaps with the *Animals* chapter, children are invited to talk about their pets, thus integrating what is meaningful in their lives into the story. Allowing all children with pets to talk may take several days, but that’s okay. A foundation is being laid. The first of the *Stories We Tell All Children* are stories the children tell each other and they are likely to learn not only about cats and dogs but also rabbits, gerbils, hamsters, birds, and perhaps a few unpredictable creatures. All of these should be explored with photos brought in by the children, pictures teachers provide in books, and whatever other resource might be available. Questions should be asked and discussion followed: Why do you have a pet? How does your pet make you feel? What other pets do people have? Questions can lead beyond the children’s pets into discussions of bigger “cats” (lions, tigers, leopards), and wild “dogs” (wolves), farm animals (horses, cows, pigs), and a whole variety of forest and swampland creatures (raccoons, frogs), with special attention to animals it might not be wise to keep as pets.

Children are intensely interested in animals from a very early age. Reasons are easy to understand: throughout our evolutionary past and in fact through the entire past of life on earth, other animals have meant two things: food and danger. Children are thus hard wired to pay attention to animals. This natural interest provides fuel for explorations in a huge area of knowledge. How many animals is a K-5 child able to remember? An elementary hard-board
book for children as young as two is called *First 100 Animals*, a reminder of just how many there are. By age 10 most children could well know many more, perhaps hundreds. With subsidiary information added in about their diets (carnivorous, vegetarian), and habitats (forests, jungles, swamps, rivers, oceans), this basic *Animals* chapter turns out to contain a remarkable array of information—the real world upon which the science of Biology is based.

In developing this approach to science through narrative, the teacher should provide a completely integrated approach to learning about Animals. This means that familiar animal stories should be a regular component. A kindergarten child may already have experienced some of the many stories by Beatrix Potter, *The Tale of Peter Rabbit*, for example. By the first grade, children are ready for longer works. My own memories of my first grade teacher reading *The Adventures of Jerry Muskrat* to the class prompts me to recommend “the-adventures-of” series by Thornton W. Burges, twenty books written a century ago. Burgess’ books, most of which I read several times, left an indelible impression of the various aspects of nature: the Purple Hills, Green Forest, Green Meadows, Laughing Brook, and Smiling Pond, along with characters like Billy Mink, Bobby Coon, Paddy the Beaver, Grandfather Frog, Sammy Jay, and dozens more.. It was also a dangerous nature hunted by Farmer Brown’s Boy whose traps threatened their lives—as dangerous as the European forest of Felix Salten’s *Bambi* (1923): his mother is killed by hunters. These are subtle stories that bring into focus the way that humans have an impact on wildlife and nature. For the teacher’s perspective, it is interesting to know that hunting and fishing continue to have the greatest effect on wildlife populations and endangered species—far more than habitat reduction or climate change. First grade is too early to talk about species extinction and loss of biodiversity caused by humans but groundwork for these later discoveries can be laid in subtle ways.

An important question that may be answered by the children: Do all the kittens born to a cat look the same? Do all the puppies born to a dog look the same? An answer with a description of differences may be forthcoming and it should be extended: Do you look exactly like your brothers or sisters? Do your uncles look exactly like your dad? From this, children can be led to a conclusion: offspring resemble each other, but they also have slight differences in appearance, and even in height, weight, and personal talents. The perceptive teacher will understand that these simple observations about their own family members not only heighten their perception but
also lay the groundwork for a later understanding of genetic variation—one of the crucial components of Darwinian evolution.

Discussion will necessarily return to Animals many times throughout the early grades, with focuses on groups of animals, animals of deserts, or perhaps animals of Africa. Such discussions should lead to new ideas. We feed our pets when they are hungry but wild animals like deer have to eat grass. What happens if there is no rain for a long time and the grass doesn’t grow? What happens to fish if something bad falls out of a boat into the water? Meanwhile, the Trees chapter of the basic story should be explored, first with trees the children know from their front lawns and back yards, then from the local park. A collection of leaves, an examination of different kinds of wood, and activities of planting saplings will provide an extensive education—again, grounded in the real world. At the same time, abstract ideas of where trees get their energy and nutrients and how the parts of nature are interdependent will be discovered, but always in the context of the experienced world. The ways that people use trees to build should be explored and this provides a beginning for children to experience building, the foundation of engineering. A few sets of Lincoln Logs and Tinker Toys will allow a class to undertake this use of wood for themselves. A creative K-2 class cluster might well include a set of blocks—several hundred—cut from standard 1” x 2” and 1” x 4” pine in lengths that produce squares and rectangles. Photographs taken of structures children produce can then be used as “plans” or “models” for children in later classes to emulate, thus providing an introduction to how work in the real world is actually done. At the same time, stories about trees should be worked in: Shel Silverstein’s illustrated book The Giving Tree (1964) should not be missed.

Exploration of the World chapter should start with the world the children know, whether city or country, moving outward to features of the land, beach, hills, rivers, lakes, and the ocean. Experiments with water—boiling, freezing, thawing, and drying in the sun—connect the water of rivers and lakes with water from the tap and water evaporating to the clouds. Beach stones, rocks in the garden, and mountains (which are huge rocks) can be explored; different colors indicate different materials they are made of. A classroom rock collection will expand this understanding, and should include various common metals (copper, iron, silver, gold) which are found in rocks and dug out of the ground. These in turn can lead to explorations of metal materials in everyday things: kitchen flatware, pots and pans, door handles, the child’s bicycle and parent’s car. If
followed assiduously, the chapters of the basic five-chapter story can lead the child’s field of awareness outwards, gradually linking most of the world around to this story.

The *Children* chapter should open up the social world of children around the world: what they eat, do, and wear; a class globe can establish where they live. Numerous children’s books can enhance this chapter: well-known fairy tales usually center on children; to these a collection of Native American stories can be added. A reading of several illustrated “Cinderella-stories” (Chinese, Egyptian, Korean, Persian, Indian, Cambodian) can open up both cultural differences around the world, and fine literature.

The *Stars* chapter leads to everything in the sky: Sun, Moon, the Milky Way, and a few easy-to-find constellations with their stories—always the stories that go with the constellations. Here children can learn that Sunday and Monday are named for the Sun and Moon. They can discover where the Sun rises and where it sets, how the Moon starts small, grows large, then thinner, and finally disappears, once every month. (The small variation that produces 13 Moon cycles over 12 months is not important at this point.) Children will be surprised to learn that the world “month” is named for the Moon which reappears the same way every month. But the importance of *Stars* must be emphasized again and again: what are those bits of light in the darkness of night? BITS of light—*Bonfires In The Sky*. Like a bonfire we build in the backyard to cook hotdogs and marshmallows, these *Bonfires In The Sky* are busy cooking all the stuff (there is no better word here) that everything else is made of. The *World, Trees, Animals, and Children* are all made of stuff cooked up in the Stars.

**Adding New Stories: Grades 2-5**

The basic refrain, *Stories We Tell All Children* is sufficient as an organizing narrative for exploring nature (*Stars World Trees Animals Children*) throughout the early grades. It is easy to remember and review and it privileges children in the final chapter. However, the second-grade teacher can build on it to refine children’s understanding. *Expanding the Animals chapter is a logical place to begin with a new, easy-to-remember* story which becomes a memorable *refrain*. The refrain, initial letters, and big story are written on the whiteboard:
This sequence allows for first steps in animal classification. Animals discussed in first grade can now be identified within a larger story. Other facts may be introduced; for instance, the first three classes are cold blooded; the last two are warm blooded. The first four give birth by laying eggs which later hatch while the final group, the Mammals, produce live offspring. Additionally, the sequence moves from water creatures (fish) to half-water-half-land animals (amphibians) to well-known land animals (reptiles and mammals). Children can now place dinosaurs in the class of reptiles and some bright member of the class will probably already know that birds descended from flying dinosaurs. The unspoken story is the narrative of biological evolution; here the foundation is laid.

Grade Three

The third grade is time enough for a second refinement. A new refrain introduces a new story and provides another taxonomy, an expansion of the Trees chapter:

Trees are the largest examples of plant life on Earth and thus the logical group to emphasize in the basic story, but now other major kinds of plants can be explored. This is not an evolutionary taxonomy. It is true that from the fossil record, a provisional chronology for the appearance of various species has been established but this has little purpose outside the discipline of paleobiology. What is useful for children is a way of classifying the common growing things they see in their backyards and neighborhoods and the power this elementary taxonomy has for refining perception. Nutritious foodstuffs come from every class: carrots, potatoes, lettuce, and...
cabbages from Plants; honey from Flowers; cereal from special kinds of Grass; berries from Bushes; fruit from Trees; grapes from Vines. By this time, children can also understand varieties within each category; for instance, seaweed and water lilies are plants that live in water, vines like to climb up other things into the air, and “weeds” are many different kind of plants no one wants in their gardens because they crowd our flowers and vegetables. Given the huge number of trees, flowers, grasses, and bushes that can be found and named, this provides another vast area of knowledge and related information.

Children’s books should continue as a classroom resource. More than a century ago, Sibylle von Olfé, a German writer, created a children’s classic in The Story of the Root Children (1906), available in several illustrated versions capturing the changing seasons in terms of the life cycle of flowers. Her Swedish rival, Elsa Beskow, created another in Children of the Forest (1910); both produced several others relevant to nature. At least three tree books are worthy of inclusion in the class library. Carol Reed-Jones’ The Tree in the Ancient Forest (1995), written in poetry, follows the life of a 300-year Douglas Fir. Holling Clancy Holling’s Tree in the Trail (1942) brings life to American history by following the story of a cottonwood tree on the Santa Fe Trail in Kansas from Native American to pioneer times. Kathy Baron provides an even more extensive framework in The Tree of Time (1994) by following a giant sequoia from its beginnings during the Roman Empire to its demise in the twentieth century.

Grade Four:

Fourth grade is an appropriate time to begin a wider exploration of the second chapter of the basic story: the World. By this time, children should be familiar with the globe, and they should be encouraged to learn the names of the seven continents, four oceans, and perhaps be able to point out the five biggest countries in the world (Russia, Canada, China, Brazil, United States). Children have absorbent minds and this is the time to build a foundation of information.

The major North American rivers (Ohio, Columbia, Illinois, Mississippi, St. Lawrence) should be a priority as should the Great Lakes around which a dozen major cities and 120 million people are clustered. Major cities in one’s own and adjacent nations can also be included. A few major rivers around the world (Thames, Rhine, Nile, Tigris, Euphrates, Indus, Ganges, Mekong, and Yangtse) should be part of general knowledge; all have figured prominently in history and economics. At least five mountain ranges (Rockies, Appalachians, Andes, Alps, and Himalayas)
should be pointed out, but children growing up in either Eastern or Western United States will
learn of several more, including prominent mountains.

The power of literature continues however, and it is most valuable in learning about the
world. Ann Whitefield Nagda’s beautifully illustrated *Bamboo Forest* (1997) is set in China and
conveys a sense of this unusual kind of tree and the koala bear whose primary food is bamboo.
Several marvelous travel books were done by Holling Clancy Holling: *Paddle to the Sea*, a
Caldecott Honor Book in 1942, follows a miniature carved canoe carrying an Indian from a
snowy slope above Lake Superior, through all the Great Lakes, over Niagara Falls, and all the
way to the Atlantic Ocean. As an introduction for children to this part of the world, including
logging and other industries, it remains a classic. His book *Minn of the Mississippi*, a Newbury
Honor book in 1951, follows a snapping turtle from the source of the Mississippi to the Gulf of
Mexico.

An alternate organization will provide fourth grade children with a foundation for later
studies in geography, geology, oceanography, and climatology:

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**Roam Around Our Most Famous Land**

Rivers, Atmosphere, Oceans, Mountains, Forests/Fields/Farms, Lakes/Lands

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This is an invitation to introduce geography which is perhaps the most neglected field of study: it
finds virtually no support in science education. Why? The reason is primarily because geography
has disappeared as a department in the modern university—evidence of the pervasive influence
of the academy on K-12 education. No test results for geographical knowledge were reported in
*A Nation at Risk*. No mention of geography appears in *Science for All Americans* and none of
the subsequent Project 2061 include it. It is not surprising, then, that many high school graduates
can be continents away if asked to point out on a map nations in the news. My own experience
with university juniors and seniors reveals dismal ability to point out any more than the most
identifiable coastal American states.

Undoubtedly, geographical areas of greatest interest for children are lands, lakes, rivers,
and forests; these are where they live, vacation, and go camping with their Boy Scout troops. But
all are areas of concern as people take up more land for their homes, forests are cut down for lumber, and rivers and lakes suffer from increased use. Incorporating literature into the curriculum, the teacher should include *Lorax* (1971) by Dr. Seuss, one of the few books that deals with environmental depletion due to human activity. It is time for children to begin learning the interconnections: human activity makes changes and sometimes causes damage to the atmosphere, rivers, and lakes; fishing to feed billions of people is putting a strain on oceans. Fourth grade is not the time to tell alarming stories of environmental decay, extinction of species, and global warming; rather it is a time to begin the process of showing how humans affect the places where they live and travel.

By now, *Water* is understood as having three states: solid, liquid, and vapor. This pattern applies to everything else in the world. Mountains, rocks, and stones are in a solid state, but heating them can turn them to liquid. Lava flowing out of volcanoes is liquid rock. Metals like iron, copper, silver and gold are solid, too; but shaping them to make coins, tools, or motors for cars requires heating them until they become liquid; then we can shape them the way we want. Liquids can in turn boil or evaporate. Ocean water evaporates into the sky, forming clouds that carry water over the land where it is dumped as rain, which flows down rivers, back to the ocean.

One of the most exciting discoveries about the world is plate tectonics. Put simply, the continents are moving. A science teacher should begin by pointing out what Alfred Wegener first pointed out in *The Origin of Continents and Oceans* (1912)—that the opposite shores of the Atlantic clearly fit together and that similar fossils of ancient creatures had been found on opposite sides of the ocean with no way for them to travel between them. From this, he guessed that all the world’s lands were once joined in a supercontinent we now call Pangea. The enterprising science teacher might search out two *National Geographic* maps of the Atlantic and Pacific Ocean floors published in June 1968 and October 1969, and still available. Relief pictures of mid-ocean mountain ranges make visible what is hard to imagine—the 40,000 mile long undersea mountain range where lava forced up from the Earth’s interior is forcing gigantic plates to move at a centimeter or so a year. This is the beginning of understanding why the Earth’s surface has buckled into mountain ranges and subduction drives volcanic eruptions like those around the Pacific Rim. Students will be ready to learn about earthquakes and tsunamis.
Grade Five

The fifth grade may be the time to open out the many arenas of human activity as a foundation for subsequent explorations of history, economics, culture, and the many advances of the modern era. Working still from our basic story—Stars World Trees Animals Children—three chapters of which have been expanded in the second, third, and fourth grades, the fifth grade expansion can be captured in a new story, but extended to the societies where children live:

Together People Always Choose Several Interesting Tasks

Tools Painting Agriculture Cities Schools Industry Technology

Dozens of other terms could be fitted in: certainly Trade, Roads, Ships, Machines, Music, and Literature are equally important developments in the history of humanity. However, it is not necessary to include every possible step in human development. By the fifth grade, students understand that the various chapters include many subchapters that are equally part of the larger story. The first word of the refrain, Together, emphasizes that humans work as a community. The narrative chosen provides a history of social accomplishments that extends far back in time: the invention of Tools (choppers, scrapers, spear points) precedes the 200,000-year history of Homo sapiens, and the use of fire for cooking may go back even farther. Painting is chosen as the next chapter because of the astonishing production of cave and rock paintings found worldwide but most dramatically in caves at Chevaux and Lascaux in France and Altamira in Spain. This development is often considered a sign of a cognitive “big bang” that began the ascendancy of Homo sapiens around 40,000 years ago, although remarkable evidence of fire technology in South Africa as long ago as 190,000 years suggests a more extended history of cognitive development. The chapters on Agriculture and Cities as primary revolutions in the past 10,000 years provide students with an introduction to the human control of food, its role in creating an increase in the human population, and the resulting urban revolution. The Schools chapter is strategically chosen; this narrative is an expansion of the original Children chapter. By emphasizing schools, evidence for which is found among the earliest civilizations, the importance of education for human society is highlighted. The final chapters, Industry and Technology, provide well recognized markers for major human advances of the past 300 years. Given that Engineering is a component of STEM education and forms a major component...
through Project 2061, the Industry and Technology chapters provide multiple opportunities to explore the modern human enterprise—right up to computers, tablets, and cell phones.

The story of human development beginning with Tools inevitably raises the question of what happened earlier. As presented, not only the basic story but later expansions imply a history of development, though without getting into details, Darwinian or otherwise. The expanded Animals chapter—Fish, Amphibians, Reptiles, Birds, Mammals—ended with a biological category that includes humans, thus implying an evolutionary process, but without the development of one species of Mammals that led to humans. This needs to be firmed out by showing the roots of humanity within a particular family of mammals: the Primates. Here a clarifying story is in order:

**Perhaps All Learning Has Enjoyable Stories**

P A L H E S

Primates “Ardi” “Lucy” Habilis Erectus Sapiens

Introducing this should begin with the remarkable features of Primates which persist in modern humans; substantial brain size, opposable thumbs, fingernails in most of the larger species, fingerprints which provide friction for climbing, and binocular vision—in some cases color vision. “Lucy” (Australopithecus afarensis) whose fossilized remains were discovered by Donald Johanson in 1974, is by now so widely known as to be a common conversation piece. “Ardi” (Ardipithecus ramidus) is not yet widely known; though discovered in 1992, analysis was so thorough that publication of research was delayed for 17 years, appearing finally in a special edition of Science (2 October 2009). A dramatic shift occurred between Ardi and Lucy—from 4.4 to 3.2 million years: Ardi’s splayed big toe, which provided a hand-like rear limb, morphed into an aligned big toe similar to ours, as evidenced in footprints discovered at Laotoli in 1977.

The five species named in the above story highlight a growing crowd of hominid species that now numbers around twenty in a lineage so complex that the precise developmental route is still highly debated. The species here named, however, provide landmarks in an evolutionary process spanning close to 5 million years. Homo habilis, colloquially called “handy man,” was the first to leave clear evidence of tool use. Homo erectus migrated out of Africa more than a million years ago, spread through tropic regions, learned to use fire to cook, and may have been
the ancestor of Neanderthals who died out around 40,000 years ago. Our own species, *Homo sapiens* originated around 200,000 years ago, migrated out of Africa between 100,000 and 60,000 years ago, and eventually spread to every continent except Antarctica. For classroom use, the science teacher has numerous resources to draw on: among many recent, highly pictorial books that should find a place in the middle school library, Donald Johanson’s *From Lucy to Language* (1996) and Alice Roberts’ *Evolution: The Human Story* (2011) are unsurpassed. The precocious fifth grade student will want to explore Laurence Pringle’s *Billion of Years, Amazing Changes* (2011).

So far, we have been working from a basic five-chapter narrative, *Stories We Tell All Children*, which provides a simplified history of the Universe: *Stars, World, Trees, Animals, and Children*. This meets the criterion of simplicity we suggested as necessary for an effective, memorable narrative framework. Subsequent narratives have worked as expansions of these chapters. By now the basic *story should be firmly embedded as the framework for virtually every kind of knowledge.* We have not mentioned “science” or “social science” or “humanities,” though most of the content derives from the first two while the framework of history and narrative places it well within the humanities. The time may be right now for introducing a larger perspective. At ages nine or ten, children are ready for the full story of the Universe, and no finer sequence of books does it better than Jennifer Morgan’s *Born With A Bang: The Universe Tells Our Cosmic Story* (2002), *From Lava to Life: The Universe Tells Our Earth Story* (2003), and *Mammals Who Morph: The Universe Tells Our Evolution Story* (2006). These lavishly illustrated books, multiple copies of which should be included in every Middle School library, will rekindle interest in the Grand Narrative and prepare children for the next discovery: that there is indeed much more to learn than the stories already learned.

**Grades Six and Seven**

*By the sixth or seventh grade, then, students are ready for a broader narrative that tells a fuller story.* This will extend the field of knowledge beyond the immediate field of experience by incorporating things to large and too far away to see, and things too small to be visible to the naked eye. By this time, however, telescopes and microscopes will have become part of students’ awareness as instruments of extended perception. The following eight-chapter capstone
narrative, which incorporates the basic five-chapter story, provides a framework that will suffice through high school and university:

**All Good Stories Earn Both Praise And Popularity**

Atoms Galaxies Stars Earth Bacteria Plants Animals People

By now most students know that Atoms are the smallest particles that make up the common materials on Earth. The appearance of Atoms constitutes the first chapter of this capstone narrative and lays a foundation for Physics. The time of absolute beginning (t = 0), *The Initial Moment of Emergence* (TIME), commonly called the Big Bang, is not emphasized in this story but a reading of Jennifer Morgan’s *Born With a Bang* will inevitably bring it up for discussion. Moreover, we cannot discount the influence of the modern TV comedy, *The Big Bang Theory*, in bringing one of the most difficult chapters in cosmology into public awareness. This difficulty is one good reason why it should be treated lightly, for which a simplified narrative should suffice. For sixth grade students, its importance lies in its creation of the first two elements, Hydrogen and Helium, which make up 99% of the visible matter in the Universe. For the rest of the elements, students should be reminded of their first-grade story, specifically the Stars chapter where they learned that the stars are busy cooking up the other 90 elements. Their differences in structure, atomic weight, properties, and the like provide the foundation for Chemistry.

The next chapter, Galaxies, including galaxy clusters, and the vast aggregations of galaxies called Superclusters is one of the great imagination stretchers. Some students will know something of these things already. Various large-size pictorial astronomy books should be available in the classroom, and perhaps one of the many posters illustrating the Big Bang. While the physics of the early Universe is complex, the Middle School science teacher should understand the basic story which can be found in numerous books: Neil deGrasse Tyson’s *Origins* (2004), coauthored by Donald Goldsmith, for instance; *Journey of the Universe* (2011) by Brian Thomas Swimme and Mary Evelyn Tucker, and Bill Bryson’s *A Short History of Nearly Everything* (2003), the Introduction of which is a sobering challenge to the teacher who thinks science literacy of this scope is out of reach. Bill Bryson confesses that four or five years earlier, he “didn’t know the first thing about the only planet [he] was ever going to live on.” So
he gave himself three years to find out: *A Short History of Nearly Everything* was the result and it ranks as one of the most informative book on “everything” available today.

This area of cosmology presents a challenge for the science teacher who should know as much about it as possible. The accepted theory of the Big Bang is already beyond human comprehension; this is why it took thirty years after Fred Hoyle named it (1949) before it gained acceptance among astronomers and cosmologists. Beyond these difficulties, one needs to recognize that the minds of contemporary adolescents are littered with unimaginable concepts made popular by simplifying metaphors: black holes, dark matter, dark energy, string theory, worm holes, multiverses, the god-particle, and the fiction of warp speed from *Star Trek*. It is virtually impossible to draw the line between fiction and reality—even more so with the active adolescent imagination and especially with writers for *Scientific American* treading the fine line between established fact and speculative fantasy. One responsibility and duty science teachers have is helping students to separate real from junk science. To this end it’s worth having clarifying books in the class library: Michael Shermer’s *Why People Believe Weird Things* (1997) and Robert Park’s *Voodoo Science* (2000).

It should be noted that this capstone narrative is not leading students beyond Project 2061 benchmarks, frameworks, and standards. A rereading of these publications will soon reveal that every part of this narrative is present, but the parts are not integrated into a framework story. The most exciting ideas in science are present but not emphasized. A popular book by Charles M. Wynn and Arthur W. Wiggins, *The Five Biggest Ideas in Science* (1997) identifies the really central ideas that make up science literacy (The Physics Model of the Atom, Chemistry’s Periodic Law, Astronomy’s Big Bang Theory, Geology’s Plate Tectonics, and Biology’s Theory of Evolution). All are referred to in the Project 2061 publications but none are fitted into a controlling narrative. The corrective is precisely that: fitting everything into a controlling narrative that will automatically provide order and coherence—and all of the big ideas of science.

**Conclusion**

If this narrative framework has been consistently developed, it should be so firmly established in the mind of the child that it will transcend the traditional divisions and knowledge
silos of departmentalized knowledge. As a narrative leading to human society and the student, it should provide a personally meaningful justification for its place in the educational system. Some students will go on to specialize in some branch of science at the university level, and perhaps develop a specialized area for advanced research. Such specialization, then, will fit into an already-established narrative frame, thus providing a transdisciplinary umbrella unifying all subsequent scientific knowledge. The non-science major may graduate with considerably less of what we might call “hard science” beyond one of two required general education or core courses, but will still understand the Grand Narrative within which humans reside. This is sufficient as a general definition of science literacy for our time. The implications for self-understanding and preparation for a future which is unknown and uncertain can hardly be overstated.

The Author
Barry Wood, a Canadian by birth, earned a B.A. at the University of Toronto (1963), an M.A. at University of British Columbia (1968), and an interdisciplinary doctorate in English and American Literature, Humanities, and Religious Studies at Stanford University (1974). He has taught English from middle school to graduate school, with special emphasis on American and World Literatures. He has regularly taught the University of Houston core doctoral course, History of Narrative and Narrative Theory. His career includes overseas appointments in England and Malaysia. A few years ago, he developed an interdisciplinary course called COSMIC NARRATIVES, described as “a narrative history of the Universe from the Big Bang to the present emphasizing its relevance for the human situation.” This course, offered every semester at University of Houston, fulfills core curriculum requirements for any undergraduate major and elective requirements for English majors. Theoretical foundations for the 2015 Hawaii International Conference presentation are developed in his article “Bridging the ‘Two Cultures’: The Humanities, Sciences, and the Grand Narrative,” International Journal of Humanities Education, Volume 10 (2013), 53-63. Professor Wood is a member of the American Association for the Advancement of Science (AAAS), the National Geographic Society, and a founding member of the International Big History Association (IBHA).

Proceedings: 13th Hawaii International Conference on Education Jan. 5-8, 2015, Honolulu, Hawaii
Reflection/Exit Writing: A Mixed Methods Case Study of a

Classroom Management Strategy in Fourth Grade

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Abstract

Developed as a part of a classroom management project, Consistency Management & Cooperative Discipline, Freiberg’s Reflection/Exit writing (1993) provides students with a peaceful, purposeful closure to the instructional block by allowing reflective writing on what was learned. A mixed-methods case study investigated this intervention’s impact on two fourth-grade classrooms in a predominately Hispanic, low-SES school. Comparison classrooms were used to determine the intervention’s effectiveness. Student outcomes included writing development as measured in quantity (number of words/syllables) and quality (holistic writing rubric and content analysis). When implemented with fidelity, significant differences existed between the groups’ change in writing quality ($p = .005; \eta^2 = + .17$) and in the complexity of student thinking in the writing produced; no significant changes were found in writing length.
**Purpose**

Most teachers experience classroom management concerns at the beginning of their careers, and for some this is a persistent problem that stays with them for many years (Feistritzer, 2011). Disruptive classroom behaviors and poor classroom climates have a strong impact on teacher stress and burnout (Byrne, 1999; Friedman, 2006; Clunies-Ross, Little, & Kienhuis, 2008). Without the necessary classroom management skills, teachers can become reactive to student disruptions, resulting in elevated stress and decreased student on-task behaviors (Clunies-Ross, Little, & Kienhuis, 2008). Proactive and preventative classroom management strategies are needed to reduce teacher stress, burnout, and increase students’ on-task behavior (Opuni, 2006; Author, 2012). Classroom management can be the gatekeeper for engaging and effective instruction (Author & LaPointe, 2006; Hattie & Anderman, 2013). Particularly in writing, good classroom management and organization are needed to create a focused environment within which children can compose (Ray, 2001).

**Perspective**

A positive and effective environment can provide the necessary conditions for student writing. Often referred to as the neglected “R” in today’s curriculum, writing instruction leaves a number of children behind (National Commission on Writing in America’s Schools and Colleges, 2003). Only 23% of fourth graders wrote at the “proficient” or “advanced” levels in a NAEP national study; the majority of children—61% of fourth-grade students—wrote at the “basic” level; 16% of fourth graders produced “below basic” writing (U.S. Department of Education, 1999; the last year fourth graders were assessed). In 2011, NAEP assessments continue to show similar results with the eighth and twelfth grades: (27% of the nation’s 8th graders and 27% of twelfth graders at “proficient” or “advanced” levels; U.S. Department of
Students in inner cities often fare worse than their rural or suburban counterparts (U.S. Department of Education, 2008). Houston’s writing scores were significantly below those of the nation, scoring 143 out of 300 compared to the national average of 154 (U.S. Department of Education, 2008).

To address the need for increased development in writing, researchers have suggested that writing-to-learn may bridge the gap between the time allotted for writing instruction and the time needed (Barone & Taylor, 2006). In a meta-analysis of writing-to-learn, Bangert-Drowns, Hurley, and Wilkinson (2004) found that 36 of 48 reviewed studies (or 75%) demonstrated that writing-to-learn had positive outcomes on student achievement. Writing-to-learn requires that students become reflective. When students think about their mental actions through metacognition, learning deepens. Writing-to-learn is a growing trend in elementary schools, but research addressing writing-to-learn is thin (Armbruster, McCarthey, & Cummins, 2005). This study investigates the use of a writing to learn intervention, Reflection/Exit writing, developed as a classroom management strategy (described below).

The Intervention: Reflection/Exit Writing

This study explores a writing-to-learn writing intervention that came from an unlikely source—a classroom management program. Consistency Management & Cooperative Discipline (CMCD) is a person-centered classroom management program whose primary focus is problem prevention and creating an inclusive classroom environment (Author, 1999). CMCD presents teachers with targeted strategies that extend beyond traditional classroom management—incorporating Behavioral, Instructional, and Organizational (BIO) management strategies (Author, 2013). CMCD BIO strategies are used holistically to facilitate classroom management
and help teachers become more effective in the classroom, increasing instructional/learning time. These changes have been found to decrease student office disciplinary referrals and increase student learning (Opuni, 2006; Slavin & Lake, 2008; Author, Huzinec, & Author, 2009).

Reflection/Exit writing is one of the Instructional management strategies presented within the CMCD program and is the intervention this study investigates. Through this instructional strategy, students are provided 5-6 minutes to write freely about what they learned. Students can use notes or books as resources during writing. To teachers, student reflective writing is an ungraded, formative assessment of teaching and learning — they see students’ misconceptions, can address student questions, and find ways to extend learning.

Reflection/Exit writing has been implemented by CMCD teachers for over 20 years, yet its independent worth is currently being assessed for the first time. This study investigates Reflection/Exit writing to determine its’ effect on fourth grade students’ writing development — measured in quantity (word and syllable length) and quality (through the state’s holistic writing rubric/content analysis).

Participants

This study was conducted at Hillview Elementary School (a pseudonym), predominately Hispanic, low SES elementary school located just outside of Houston, Texas. The sample was comprised of two fourth grade classrooms—one bilingual class, Mr. M’s class (using a Bilingual/One Way Dual Language [OWDL] program) and one mainstream, English-only class, Ms. D’s class (with English as a Second Language, ESL, support).

Throughout the course of the study, fidelity concerns emerged with Ms. D’s implementation of the intervention. Ms. D.’s classroom did not consistently follow the
implementation schedule (completing three Reflection/Exit samples per week), resulting in her classroom to lose the structured nature of the implementation and its potential benefits. In addition, Ms. D.’s absence from the classroom for more than two weeks (due to personal reasons) left a gap in the timeline of her students completing the samples. In contrast, Mr. M.’s classroom followed the study design consistently, completing three weekly Reflection/Exit samples throughout the 12 week study.

Methods

A parallel, concurrent mixed method research design was employed for this study (Tashakkori, 1998). This multi-strand research design mixes qualitative and quantitative methodology, with two or more distinct strands of research that address different questions. Three data points were used to determine what change, if any, Reflection/Exit writing had on the intervention groups’ writing quality and quantity. This case study used archival data for its analyses (student writing samples).

Data Sources

**Data Point 1: Word and Syllable Length.** To address the change in student writing length, word and syllable lengths were calculated for each writing sample at pre- and post-intervention. Independent-samples t-tests were used to determine if there were significant differences between the intervention and comparison groups’ writing length. Finally, effect sizes were calculated to measure the size of the change in student writing length.

**Data Point 2: Content Analysis.** To analyze student writing quality, an inductive content analysis was conducted to examine student writing samples at pre- and post-intervention.
Using these analyses, the researcher identified three emergent themes in students’ writing samples: Knowledge, Comprehension, and Higher-Level Thinking (defined below). Each sample was analyzed for themes at pre- and post-intervention.

**Data Point 3: Holistic Writing Rubric.** In a second analysis of student writing quality, samples were assessed by two trained raters with the use of the state’s holistic writing rubric (a modified version of the TAKS rubric used for scoring state assessments from 2003-2011; The Texas Education Agency, n.d.). Samples were scored to determine if there were differences in the quality of students’ writing at pre- and post-intervention. Results from rubric scores were analyzed (through the use of independent-samples $t$-tests) to determine if there were significant differences between change in writing quality. Effect sizes were then calculated.

**Results**

**Data Point 1: Word and Syllable Length.** There were no significant differences between student growth in terms of number of words for the intervention group ($M = 34.46, SD = 36.78$) and comparison group ($M = 33.78, SD = 33.50; t(39) = 0.058, p = 0.954$). In terms of syllables, there were no significant differences between student growth for the intervention group ($M = 39.31, SD = 35.39$) and comparison group ($M = 45.71, SD = 46.84; t(39) = -0.44, p = 0.660$).

**Data Point 2: Content Analysis.** To analyze writing quality, an inductive content analysis was conducted. The following three themes were identified, based on the Bloom’s Taxonomy of Knowledge (Bloom, 1956): (1) *Knowledge*--samples that read like list-making and/or provided knowledge level information (i.e. “Today I learned about photosynthesis and today I also learned about area”); (2) *Comprehension*--samples that demonstrated an ability to restate knowledge into their own words, providing an explanation or description of what was
learned (i.e. “Volume is like adding the cubes. You add all of the cubes and you see how many cubes fill the object”); and, (3) Higher-level Thinking-samples that demonstrated a capacity to transform their knowledge of content into deeper levels of understanding (application, analysis, synthesis, evaluation), or writing that demonstrated an analysis of what was learned, connections between ideas or an application of their learning, or to my life or the world around me (i.e. “Today I learned that summary helps me when I write because it tells me what happened in the whole story. Step by step, and it helps me (understand) how the characters work together, to get the solution. And it makes it easier for me to understand the story”).

In the intervention group, Knowledge (the most basic level) remained consistent across the intervention: from pre- (100%) to post-intervention (100%). Comprehension increased across the intervention from pre- (15%) to post-intervention (69%). Higher-Level Thinking improved across the intervention, from pre- (0%) to post-intervention (31%). The intervention groups’ student writing samples became increasingly complex over the course of the study, with rates for Knowledge remaining consistent and rates for Comprehension and Higher-Level Thinking improving.

In the comparison group, Knowledge (the most basic level) declined throughout the course of the study, from pre- (84%) to post-intervention (71%). The comparison group’s presence of Comprehension increased across the intervention, from pre- (26%) to post-intervention (39%). A slight increase in the amount of Higher-Level Thinking was found from pre- (10%) to post-intervention (19%). The comparison groups’ student writing samples became more complex over the course of the study, although not at the rates experienced by the intervention group.
**Data Point 3: Holistic Writing Rubric.** A holistic writing rubric was used for a second analysis of student writing quality. Each entry received one holistic rating, from 1-4. In order to ensure accurate writing scoring, two highly-skilled writing scorers rated each piece independently, with a 93% agreement on scoring. When raters disagreed on their assessment, both returned to the language of the rubric (in 7% of the samples) to find consensus on what score that sample should receive, to achieve 100% final agreement across all samples.

An independent samples *t*-test showed a significant difference between students’ writing quality scores for the intervention group (*M* = .77, *SD* = .73) and comparison group (*M* = .16, *SD* = .58; *t* (39) = 2.94, *p* = .005). The difference in the means (mean difference = 0.61, 95% CI: 0.18 to 1.03) was large, and the eta squared statistic (η^2^ = .17) indicated a large effect size (eta squared is an estimation of the degree of association for the sample; Cohen’s 1998 guidelines for interpreting eta squared are as follows: +.01 = small effect; +.06 = moderate effect; and +.14 = large effect; Cohen, 1998).

**Significance of the Study**

This writing intervention was developed with the intention of improving classroom management, but has a rippling effect on other aspects of teaching ad learning. Students’ writing quality improved as a result of using Reflection/Exit writing, over the course of a 12 week study. The BIO perspective of creating classroom management approaches that incorporate Behavioral, Instructional and Organizational management help create a synergy for seemingly disparate components for teaching and learning. With the limited emphasis placed on writing in the curriculum (with the exception of tested grade levels), teachers need ways to incorporate more
writing in the classroom, and use classroom management approaches to create and define the necessary conditions for student writing success.

This study suggests that Reflection/Exit writing, a writing-to-learn strategy, may help bridge the gap between the amount of time allotted to writing instruction and the amount of time needed to become a writer. The results show that the use of the Reflection/Exit writing in a Math and Science content-area classroom significantly improved students’ ability to produce better quality writing, when compared to their peers. These improvements in the quality of student writing are impressive, given that no writing instruction was provided in intervention. However, a larger study is needed to confirm these results. Teachers at the elementary level could benefit from a writing-to-learn intervention, such as Reflection/Exit writing, which helps students to improve the quality of their writing.
References


what I learned today was about perimeter, area, and volume. How to find the definition and the formula about perimeter is about the sum of all the sides added together, and the formula is \( P = s_1 + s_2 + s_3 + \ldots + s_n \), where area is the measure inside a two-dimensional figure. The formula is \( A = l \times w \), and volume is the measure of the space in a three-dimensional object. The formula is \( V = l \times w \times h \), and did you know that we are a 3D object.
Today I learned about lines. Lines can be parallel, like perpendicular. Perpendicular lines form a right angle and the intersecting lines form an acute or obtuse angle. See姿势 named all the angles and lines. Wait, I missed a line and that line is the parallel line that lines do not form an angle at all. Parallel lines just go on and on. They never will stop or meet. It just goes on and on and will never stop.

Parallel
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The Principal’s Leadership: Gains and Losses in School Improvement

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Abstract

Principals play important roles in school improvement. The principal’s leadership style shows certain tendencies, which includes transformational leadership tendency, instructional leadership tendency, and moral leadership tendency, but there is a lack of distributed leadership tendency. Teachers show different degrees of satisfaction at their school’s improvement in that the principal’s leadership style exerts a crucial influence on the difference. Through interviews and questionnaires, we investigated and analyzed the improvement practice of the four primary schools. By analysis, we summarize the principal’s leadership and its manifestation modes. Summarize problems confronted by 4 principals in school improvement and their ways to solve the problems in order to improve principal’s leadership and provide reference for school improvement.

Key words: the principal’s leadership; school improvement; leadership style

1. Introduction

School improvement is affected by various factors, among which the principal’s leadership is a crucial one. But principals manifest different tendencies of principal leadership style, which in turn brings different effects in school improvement. Teachers are the interested parties in school improvement. The teacher’s satisfaction degree of school improvement affects working enthusiasm, and then affects student scholastic achievement. Therefore, research into the power distribution state plays an important role in improving a principal’s job, teacher satisfaction degree and student scholastic achievement.

2. Method

The research adopted interviews and questionnaires as methods.

In September, 2013, members in the research group of Northeast University carried out the interview and questionnaire investigation into the principal’s leadership in 2 urban primary schools and 2 rural primary schools. As the counterpart universities of China-Africa University “20+20” cooperation project, Northeast University and Pretoria University consulted and decided that the investigated school should be of the medium level of development in terms of study area for the sake of universal significance. Through communication with Educational Bureau of Chaoyang District, Changchun city, 2 urban schools: Fujin Primary School, Kuanping Primary School and 2 rural schools: Fufeng Town Central Primary School, and Leshan Central Primary School were chosen as target schools. Moreover, these four primary schools have become the base schools for cooperation research between Northeast University and Pretoria University in China-Africa University “20+20” cooperation program.1

The interviewees are the principals in 4 schools. The content of the interview includes the description of the principals’ relevant experience (4 questions), the principal’s training (2 questions), the principal’s duty and role (10 questions), the principal and the school culture (4 questions), the principal and school improvement (2 questions), the principal’s professional development (3 questions), the principal and

1 The school facilities of 4 schools are equipped by Educational Bureau of Chaoyang District, Changchun city according to the standards of compulsory education school conditions. There is no lacking of teachers, but because there has been no new recruitment for many years, the centre of teachers’ age moves up. On the one hand, this aspect reflects the maturity of teaching staff, but on the other hand it brings crisis to the teachers’ echelon formation.
the students’ scholastic achievement (4 questions). The principal’s interview consists of 7 aspects and 29 questions altogether.

The questionnaire comprises both teacher and student investigation. The teacher’s questionnaire includes background information (6 questions), teachers versus school environment and school culture (19 questions), the teacher’s understanding of professional development (12 questions), and school improvement (10 questions). The teacher’s questionnaire consists of 4 parts and 47 questions. The student’s questionnaire contains the student’s identification with school and participation (14 questions), the student’s basic information (8 questions), 2 parts and 22 questions.

Furthermore, we tried to collect text data of 4 schools as the research reference, which involved the school planning, school working plan and summary in recent three years; the school’s rules and regulations; the midterm and final results in mathematics, Chinese, foreign language of the sixth grade students in recent one year. Only two schools’ student scholastic achievement was available. School improvement plan, student dropout rate and teachers’ attendance rate in our plan were not given by schools. Because primary schools belong to compulsory education, there are no dropouts in the four schools. Teachers won’t be absent except particular cases. Therefore, there existed no statistic significance of attendance rate from the principal’s point of view. Although all of the 4 schools had no school improvement plan, such aspects could be embodied in school development planning and in school work plan.

3. The Main Body of the Research

The principal plays an important role in school improvement. The principal’s leadership shows certain tendencies, including transformational leadership tendency, instructional leadership tendency, moral leadership tendencies, but there is a lack of distributed leadership tendency. Teachers show different degrees of satisfaction at their school’s improvement in that the principal’s leadership style exerts a crucial influence on the difference. But there is still huge improving space with regard to the correlation research on the following two aspects: the principal’s leadership style and effects of school improvement; and the principal’s leadership style and the student scholastic achievement.

1) The principal’s ways of action and future vision in school improvement

Through interviews with the principals in 4 schools, we sensed that the principal’s management had been in an improved dynamic process. The collected information can be summarized and expressed in four dimensions: the action in school improvement, the way of action in school improvement, the vision of school improvement and the goal of school improvement (See Table 1).

<table>
<thead>
<tr>
<th>The name of the school</th>
<th>The action in school improvement</th>
<th>The way of action in school improvement</th>
<th>The vision of school improvement</th>
<th>The goal of school improvement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fujin Primary School</td>
<td>being in charge of general school management, such as education, personnel matters, financial affairs, and students etc.; curriculum reform; classroom instruction reform; school environment construction; school ethos building; improving teachers’ professional ethics; teacher assessment reform.</td>
<td>undertaking the responsibility of security etc.; team building focused on leaders, teachers and students; establishing the concept of the all-round development of students; being good at detecting problems; being good at learning, and attending training to improve professional level; learning to innovate, paying attention to Moral cultivation; increasing personal charm; building special zone for learning; being teachers’ teacher;</td>
<td>enhancing the construction of student associations; developing the potential of students and their hands-on ability; offering guidance to teachers’ professional development.</td>
<td>improving the educational quality.</td>
</tr>
<tr>
<td>Kuanping Primary School</td>
<td>implementing school-based training; getting everyone involved in working out the school plan and the school scientific research; building teacher growth portfolio.</td>
<td>persevering in participation in learning and training; frequently visiting a class; being instructional principal; insisting on holding a mid-level above leaders’ meeting every week to find the problems and commend good people and good deeds; paying close attention to the management during the beginning and the ending time period of the term; not being afraid of difficulties, insisting on the school’s interests in social environment; subscribing to magazines for teachers and providing training for entire staff; assessing teacher in accordance with specific conditions; training the team of teachers; training the backbone teachers; implementing education of fun.</td>
<td>making overall plans for school environment; building the school culture.</td>
<td></td>
</tr>
<tr>
<td>Kuanping Primary School</td>
<td>the influence of educational thoughts on school development; making plans for school development; defining school objectives; having a clear concept of education; improving school facilities; carrying out environmental construction.</td>
<td></td>
<td>improving the management level</td>
<td></td>
</tr>
<tr>
<td>Fufeng Town Central Primary School</td>
<td>routine teaching work; leading a leaders’ team; leading a teachers’ team; designing instructional methods; improving instructional quality; forming school characteristics; building culture in which behaviors according with morality.</td>
<td>participating in the principal’s training; working for teachers’ welfare; sending teachers to participate in training; being a instructional principal.</td>
<td>further building the culture of the school.</td>
<td></td>
</tr>
<tr>
<td>Fufeng Town Central Primary School</td>
<td>ensuring the safety of students.</td>
<td>implementing student habit forming education.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Leshan Central Primary School</td>
<td>having instruction as core element; the all-round development of students; carrying out activities according to students characteristics;</td>
<td>participating in the principal’s training; caring about teachers; supporting teachers to participate in training; forming an hardworking style of work.</td>
<td>school bus safety; school road safety; heating safety in rural primary schools.</td>
<td></td>
</tr>
<tr>
<td>Leshan Central Primary School</td>
<td></td>
<td></td>
<td>ensuring the safety of students.</td>
<td></td>
</tr>
</tbody>
</table>
2) Tendencies of the principal’s leadership style in school improvement

The tendency of the principal’s leadership style refers to certain feature of leadership embodied in school improvement. To varying degrees, the 4 principals’ leadership styles showed certain tendencies. Laying emphasis on innovation, curriculum reform, inside and outside school involvement in school management, some principals had more ideas and actions, thus showing the tendency of transformational leadership. Persevering in attending the lectures, building culture through making use of school conditions, some principals reflected the tendency of instructional leadership. Besides routine instructional management, some principals emphasized habit forming education and building a culture in which behaviors are in accord with morality, thus giving expression to the tendency of moral leadership. And some of the principals possessed multiple leadership features, which exhibited the tendency of comprehensive leadership.

The tendency of transformational leadership

The principal is the administrator of the school, in charge of the overall school management. The principal needs to constantly find out problems, puts forward reform ideas and measures that arouse the enthusiasm of school members. But individual demand of school members should be in accordance with the school’s development goals in order to forge a joint effort. To achieve the goal, the principal is required to choose appropriate leadership style according to school members’ personality characteristics so as to stimulate their initiative, participation in school management, and promote school development (Burns, 1978)[1]. The principal of Fujin Primary School showed a certain extent of tendency of transformational leadership. The school’s teaching conditions are not very good, but its student enrollment has been on the increase. Because the principal designed school management from a holistic and dynamic perspective, emphasized overall participation in school management, paid attention to curriculum, instruction, educational environment, school spirit, teachers’ professional ethics and teacher assessment etc, the school achieved rapid development.

The tendency of instructional leadership

The common understanding of 4 principals is that “instruction is the core element of school work”. All of the 4 principals make great effort to reform the instruction. They take frequently attending a class as their common practice to form the capacity and habit of instructional principals. To be qualified instructional principals, they kept learning and reading books; taking part in principal training; forming instructional models; providing support to teachers’ training, implementing school-based training and enhancing the professional development of teachers; and stimulating student interest in learning by means of school culture. All these efforts made us feel the tendency and broader development space of instructional leadership, therefore, contributed to the formation of a successful instructional principal.

The tendency of moral leadership

Advocating moral leadership is to emphasize the moral behaviors in the leadership style for the purpose of integrating principal morality with overall work of the school. The high level leaders will in turn motivate teachers and give full play to the initiative of teachers. In such a process, the teacher’s leadership gradually comes into being and teachers become “leader’s leaders” (Sergiovanni, 1992)[2]. A certain degree of tendency of moral leadership was revealed in the 4 principals. The principal of Fujin Primary School stressed self-cultivation and a sense of duty; the principal of Kuameng Primary School insisted on commending good people and good deeds in a mid-level above leaders’ meeting to set up a healthy school atmosphere; the principal of Fufeng Town Central Primary School endeavored to build culture in which behaviors according with morality; and the principal in Leshan Central Primary School try hard to form an hardworking style of work.

The tendency of comprehensive leadership

Through interviews and consulting school literature, we can see that although principals showed different tendencies in their leadership styles, they took on comprehensive tendency in their overall
leadership. For instance, the principal of Fujin Primary School gave expression to both transformational and instructional leadership, while principals of Kuanping Primary School, Fufeng Town Central Primary School and Leshan Central Primary School embodied the tendency of moral leadership. However, their leadership behaviors are based on the accumulation of experience rather than on consciously employing theories to guide practice.

3) The principal’s leadership style affects the teacher’s degree of satisfaction at school improvement

In the investigation, 155 teacher questionnaires were sent out, and 155 questionnaires were taken back. There were 144 effective questionnaires with a 93% effective rate. By choosing among “strongly agree”, “agree”, “disagree”, and “strongly disagree” to give the true response, the teacher’s satisfaction degree was revealed. From the investigation, we can see that there exists difference in the overall state and specific index of school improvement to teachers in different schools (See table 2).

Table 2. Difference in the dimension of school improvement in 4 schools

<table>
<thead>
<tr>
<th>School code</th>
<th>N</th>
<th>alpha = 0.05 subset</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fufeng Town Central Primary School</td>
<td>37</td>
<td>1</td>
</tr>
<tr>
<td>Kuanping Primary School</td>
<td>46</td>
<td>29.8913</td>
</tr>
<tr>
<td>Leshan Central Primary School</td>
<td>18</td>
<td>31.5000</td>
</tr>
<tr>
<td>Fujin Primary School</td>
<td>43</td>
<td>31.8605</td>
</tr>
<tr>
<td>Significant difference</td>
<td>134</td>
<td>0.081</td>
</tr>
</tbody>
</table>

Tukey HSD* means for groups in homogeneous subsets are displayed.
a. Uses Harmonic Mean Sample Size = 31.353.
b. The group sizes are unequal. The harmonic mean of the group size is used. Type I error levels are not guaranteed.

Table 2 displays that the four schools are divided into two groups in school improvement level. There exists significant difference between Fufeng Town Central Primary School and Leshan Central Primary School, Fujin Primary School, while there is no significant difference between Leshan Central Primary School and Fujin Primary School. Kuanping Primary School crosses over two groups. Studying its internal P-value, we can see that its internal inspection p of the first subgroup is 0.134 and of the second subgroup is 0.081. The latter is closer to 0.05, so it belongs to the first subgroup. Therefore, there exists no difference in school improvement between Fufeng Town Central Primary School and Kuanping Primary School, and the same to Leshan Central Primary School and Fujin Primary School, but there is difference between two school subgroups. With an urban school and a rural school classified as a subgroup, urban - rural factor is not the influencing factor.

Then what are the influencing factors in the teacher’s satisfaction at school improvement? Questions centered around 10 aspects of school improvement results are investigated, which includes: student scholastic achievement is improved; Student attendance rate is high; student dropout rate is low; student with difficulties in study receive support and help; scholastically successful students are recognized by teachers and students; students being good at arts and sports are recognized by teachers and students; students of achievements will be commended by school; school conditions are improved; the library purchases new books every year; parents strongly request improvement in student scholastic achievement. Among these 10 indexes, the tenth index (parents strongly request improvement in student scholastic achievement) bears no significant difference in the influence of teacher satisfaction degree in the 4 schools, and consequently, it is excluded. Presenting significant difference between two subgroups, other 9 indexes correlate with the teacher’s satisfaction degree (See table 3). The 9 indexes are summarized, and questions in two aspects are revealed: one is student scholastic achievement and school’s attitude towards student scholastic achievement and the other is school conditions. Even if school conditions exert influence on the teacher’s satisfaction degree, the index does not belong to the domain of leadership style for it is uniformly provided by administrative department for education. We can draw at least two conclusions from the results: first, the teacher’s satisfaction degree is directly correlated with student scholastic achievement and school’s attitude towards student scholastic achievement; second, school’s attitude towards student scholastic achievement is affected by principal leadership style, because principals can not only motivate students to improve their scholastic
achievement by means of making policies and institutions, commending students of achievements, and helping students with learning difficulties etc, but they can also indirectly reach the goal by supporting teacher professional development, promoting the qualities of teachers. And that is why principal’s leadership has an effect on students and then on the teacher’s satisfaction degree. This shows that the choice of what kind of leadership to promote the development of school is a question worthy of great attention.

However, despite the positive aspects of leadership style reflected in school improvement, there still exist some defects. Influenced by school leadership system in China, the principal’s leadership style has an inclination of power centralization. From the investigation, we saw that the principal took care of every single thing personally from the school corridor layout and teacher classroom assessment to the playground design etc. For one thing it reflected the consciousness of responsibility, for another the principal were not accustomed to distributing leadership throughout the school to stimulate the teachers’ initiatives.

Distributed leadership has received more and more attention in educational leadership research, because it is based on cognition theory and focuses on the source and model of effect occurring in the organization (Harris, 2009)[3]. Studies show that different effect sources like power, task and leadership etc affect the adherence degree of followers to the leader. Different ways of distributing leadership bring out different results in the organization (Harris, 2009, p.5). Distributed leadership lies in the effective distribution of power and “to be leader’s leader” so that everyone in the organization can realize his or her potential (Harris, 2009, p.3). But by taking care of every thing personally, the school management is apt to be caught in the rigid thinking mode in which the power is greatly centralized. This is obviously against the theory of the learning organization. Although the principal pay attention to the teacher professional development, training of backbone teachers and teachers’ team, the operation of power is in an up-down vertical process without being distributed to teachers. By this way, it may bring some effects in school improvement, including the enthusiasm of involvement and thinking space etc. However, the question about whether a distributed leadership model will definitely bring out corresponding positive effect in school improvement is really complex, and the ways of power distribution has to be verified in research.

Table 3. Difference of index in the dimension of school improvement in 4 schools

<table>
<thead>
<tr>
<th>Question</th>
<th>School code</th>
<th>N</th>
<th>alpha = 0.05 subset</th>
</tr>
</thead>
<tbody>
<tr>
<td>Student scholastic achievement is improved.</td>
<td>Fufeng Town Central Primary School</td>
<td>37</td>
<td>3.1622</td>
</tr>
<tr>
<td></td>
<td>Kuanping Primary School</td>
<td>46</td>
<td>3.4348</td>
</tr>
<tr>
<td></td>
<td>Leshan Central Primary School</td>
<td>18</td>
<td>3.7222</td>
</tr>
<tr>
<td></td>
<td>Fujin Primary School</td>
<td>43</td>
<td>3.7222</td>
</tr>
<tr>
<td></td>
<td>Significant difference</td>
<td></td>
<td>3.7907</td>
</tr>
<tr>
<td>Student attendance rate is high.</td>
<td>Fufeng Town Central Primary School</td>
<td>37</td>
<td>3.2703</td>
</tr>
<tr>
<td></td>
<td>Kuanping Primary School</td>
<td>46</td>
<td>3.5652</td>
</tr>
<tr>
<td></td>
<td>Leshan Central Primary School</td>
<td>18</td>
<td>3.7674</td>
</tr>
<tr>
<td></td>
<td>Fujin Primary School</td>
<td>43</td>
<td>3.7778</td>
</tr>
<tr>
<td></td>
<td>Significant difference</td>
<td></td>
<td>.070</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>.289</td>
</tr>
<tr>
<td>Student dropout rate is low.</td>
<td>Fufeng Town Central Primary School</td>
<td>37</td>
<td>3.3514</td>
</tr>
<tr>
<td></td>
<td>Kuanping Primary School</td>
<td>46</td>
<td>3.5870</td>
</tr>
<tr>
<td></td>
<td>Leshan Central Primary School</td>
<td>18</td>
<td>3.7674</td>
</tr>
<tr>
<td></td>
<td>Fujin Primary School</td>
<td>43</td>
<td>3.8333</td>
</tr>
<tr>
<td></td>
<td>Significant difference</td>
<td></td>
<td>.184</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>.153</td>
</tr>
<tr>
<td>Student with difficulties</td>
<td>Fufeng Town Central Primary School</td>
<td>37</td>
<td>3.3514</td>
</tr>
</tbody>
</table>
In study, students receive support and help.

<table>
<thead>
<tr>
<th>School</th>
<th>N</th>
<th>Mean</th>
<th>Std Dev</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kuanping Primary School</td>
<td>46</td>
<td>3.5217</td>
<td>3.5217</td>
</tr>
<tr>
<td>Leshan Central Primary School</td>
<td>18</td>
<td>3.7778</td>
<td></td>
</tr>
<tr>
<td>Fujin Primary School</td>
<td>43</td>
<td>3.8140</td>
<td></td>
</tr>
</tbody>
</table>

Significant difference

3.5217

Students being good at arts and sports are recognized by teachers and students.

<table>
<thead>
<tr>
<th>School</th>
<th>N</th>
<th>Mean</th>
<th>Std Dev</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kuanping Primary School</td>
<td>46</td>
<td>3.5652</td>
<td>3.5652</td>
</tr>
<tr>
<td>Leshan Central Primary School</td>
<td>18</td>
<td>3.7778</td>
<td></td>
</tr>
<tr>
<td>Fujin Primary School</td>
<td>43</td>
<td>3.7907</td>
<td></td>
</tr>
</tbody>
</table>

Significant difference

.116

Parents strongly request improvement in student scholastic achievement.

<table>
<thead>
<tr>
<th>School</th>
<th>N</th>
<th>Mean</th>
<th>Std Dev</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kuanping Primary School</td>
<td>46</td>
<td>1.5581</td>
<td>1.5581</td>
</tr>
<tr>
<td>Leshan Central Primary School</td>
<td>18</td>
<td>1.5870</td>
<td></td>
</tr>
<tr>
<td>Fujin Primary School</td>
<td>43</td>
<td>1.7027</td>
<td></td>
</tr>
</tbody>
</table>

Significant difference

.342
4. Conclusion

The principal’s leadership style shows certain tendency, and all the different leadership tendencies have influence on school improvement. Student scholastic achievement and school’s attitude towards student scholastic achievement rather than urban-rural factor are the influencing factor in the teacher’s satisfaction degree. And school’s attitude towards student scholastic achievement is affected by the principal’s leadership style. In the present leadership system, when managing schools, principals frequently adopt the vertical operation of power. There is a lack of distributed leadership. Appropriate horizontal distribution of power is better for arousing the enthusiasm of teachers and their efforts to help students to improve their scholastic achievement, which in turn increases the teacher’s satisfaction degree of school improvement. Therefore, it is very necessary to study the correlation between the principal’s leadership and effect of school improvement, and student scholastic achievement. But with small sample size which is limited to 4 schools, the understanding of the correlation between the principal’s leadership and school improvement inevitably has limitations.

References
Interdisciplinary Strategies for Incorporating Movement into the Elementary Curriculum

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Abstract

Physical Activity can have a positive impact on the well being of children and youth. Schools and teachers can play a large role in increasing and possibly impacting the physical activity habits of students. In addition to providing Physical Education and recess, physical activity can often be incorporated into classroom lessons to increase the amount of time that students are active during the school day. Lack of opportunities can often limit student physical activity outside of school. Fitness knowledge and skills, locomotor and non locomotor skills, manipulation activities and movement concepts can be incorporated into other curriculum areas including science, math, reading and social studies. A number of interdisciplinary ideas and strategies have been developed that focus on motivating and getting elementary students physically active while reinforcing skills in other content areas. These strategies and activities are designed for both the classroom teacher and movement specialist to easily incorporate into their curriculum. The strategies and activities are designed for maximum participation and are aligned with the national Physical Education content standards. This presentation will discuss several interdisciplinary strategies and lessons.
ABSTRACT

Tips from the Trenches: How to Stay in the Game as an Educational Leader

This dynamic session aims to help school leaders survive and thrive in the educational leadership arena. Sometimes, it’s the small things you may not even be aware of or soft skills not taught in your administration courses that go unmentioned in leadership circles. Research reports that current school leaders are retiring at unprecedented rates and that an entire new generation of school leaders is poised to replace them over the next few years. **Tips from the Trenches** will provide aspiring, new and experienced school leaders the important survival tools necessary to stay in the game as they lead our nation's schools.

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Language Loss and its Costs Among Newcomer ELLs
HICE 2015 Conference Proceedings

1. Title of session: Language Loss and its Costs Among Newcomer ELLs

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Language Loss and its Cost among Newcomer ELLs

Refugee resettlement in the United States annually contributes to the vast diversity of English language learners (ELLs) attending U.S. public schools, creating a colorful mosaic of languages and cultures in many classrooms (Monger & Yankay, 2011). The United States provides people hoping to start over three routes to legally enter the country: immigration, refugee resettlement, and political asylum. Immigrants, refugees, and asylees are frequently lumped together because of the assumption that their experiences are the same or at least comparable. Yet the psychosocial and acculturative profiles of refugees and asylees have little in common with those of immigrants (Segal & Mayadas, 2005), thereby adding to the diversity of experiences the students may bring to the classroom.

What are the potential benefits of educators being well informed about the different paths to residence for newcomers to the United States and about how refugees and asylees differ from the more numerous immigrants? How will knowledge of the factors that contribute to language loss assist educators in supporting the linguistic and cognitive growth of their ELLs? How will young ELLs benefit from teachers who are enlightened about the needs of newcomers who are refugees and asylees? While this knowledge will not cause curriculum to be supplanted, it will assist teachers in the thoughtful selection of materials, books, and strategies for teaching children who are at risk of school failure and dropping out. It is important to articulate the obvious - that most newcomer ELLs, including immigrants, refugees, and asylees, will encounter challenges not only in second language acquisition, but also with acculturation issues and adjustment to a new society. Informed educators avoid creating cultural borders by comprehending the cost of language loss and language replacement. Similarly, they understand that forcing the loss of cultural identity that accompanies language loss does not lead to a better educated student or a stronger society. The intent of the presentation is twofold—to provide a brief overview of refugee resettlement in the United States and to investigate the linguistic, academic, and affective consequences of language loss among newcomer ELLs during acculturation and second language (L2) acquisition. Due to the similarities that exist between the refugee and asylee experiences, it is assumed that information regarding cultural, linguistic, and acculturative
challenges pertaining to the refugee may be generalized in most cases to that of the asylee and the unaccompanied minor who enters the United States without parents.

Segal and Mayadas (2005) note that in spite of changes to immigration patterns and laws that have occurred since the beginning of the 21st century, most newcomers, regardless of their status, have endured subjugation and unfair treatment at some point in their adjustment.

They have historically been denied opportunities because of the color of their skin, the accent with which they speak, or the clothing they wear. Despite difficulties, overt and institutionalized discrimination, and sometimes, few apparent resources, most . . . stay, establish a living, and raise children in this country. Despite cultural conflicts, language barriers, or marginalization, most . . . draw on all their tangible and intangible resources to survive here. (p. 567)

Assimilation, also known as dissonant acculturation, becomes evident as an acculturation strategy of choice when an ELL both openly and privately discards his or her original culture in favor of the new U.S. American culture (Portes & Rumbaut, 2006). Unfortunately, when a child makes such a choice, the child experiences a growing loss of familial support, increased isolation, and a disruption in parent-child communication. Parents of ELLs who have selected assimilation for their adjustment plan face an increased difficulty enculturating their children into their cultural and language group. As the children become more comfortable in abandoning their heritage cultures and languages, their outlook towards language, culture, and life in general may no longer be in agreement with that of their parents (Messer & Rasmussen, 1986).

Selective acculturation is an acculturation process that involves the acquisition of a second language, such as English, and learning a new culture, such as U.S. American culture, while simultaneously preserving significant portions of the heritage language and culture (Portes, Fernandez-Kelly, & Haller, 2009). During selective acculturation, parents are able to maintain stronger parental controls over which aspects of language and culture should be conserved by young family members. Selective acculturation is typified by parents who are strong in their first languages and heritage cultures. They are involved in interconnected linguistic and ethnic communities. Fluent bilingualism is a common characteristic of children whose parents chose a path of selective acculturation for them (Portes & Rumbaut, 2006).

In the past, near total language loss took generations, occurring somewhere between the second and third generation within a family (Portes & Rumbaut, 1990). Gradually, the parents
within subsequent generations after the first simply stopped using the heritage language at home for meaningful communication (Portes & Rumbaut, 1990; Wong Fillmore, 2000). Conversely, today’s newcomers experience a speedy dislodging of the heritage language with the result that few immigrant, refugee, or asylee students become bilingual by learning English (Wong Fillmore, 2000). There are those, including some educators and administrators, who view such a replacement of the heritage language as a type of success story, something that must occur if students are to be successful in school and society (Portes & Rumbaut, 2006). Until recently, a sometimes common attitude within the educational community was that parents should not speak the heritage language at home and that failure of students to learn English as a second language rapidly could be blamed on parents who continued to speak and read the heritage language with their children. Teachers asked the parents of newcomers to refrain from speaking any language other than English at home (Nieto and Bode, 2012). Parents whose cultural traditions included respect for and even deference to the teacher as the expert in the area of a child’s learning would begin the process of abandoning the heritage language, believing that this would help their children to learn English more quickly.

With the exception of those who come to the United States from a few nations where English is an official first or second language, refugee children arrive in their host country and encounter a new language setting. They must learn English as an official second language as it is essential for communication, for learning in school, for conducting business, and accessing necessary social services and medical resources (Saville-Troike, 2012). For some, the realization that their first language no longer affords them any control over their lives in school or society, coupled with the need to negotiate a bicultural existence, is disquieting, a troubling aspect of acculturation and second language acquisition.

The causes of language loss stem from factors within and outside of the newcomer ELL. Both internal and external factors that lead to language loss will be explored and discussed. When young ELLs begin to give up their heritage language, it is usually before they master the second language. Once the ELL has rejected the native language, there is no certainty that full proficiency and literacy in L2 will develop. Children who experience dissonant acculturation are at greater risk of school failure, inappropriate social behavior, such as joining gangs and criminal activity, because of weakened familial relationships. As conflict between children and their parents over cultural issues increases, academic performance suffers (Portes & Rumbaut, 2006).
Conversely, Portes and Hao (2002) found that adolescents who were fluent bilinguals had better relationships with their parents, more successful psychosocial adjustment, and higher academic performance.

The linguistic, academic, and affective consequences of language loss will be considered in this presentation. Recommendations for stemming language loss among ELLs through the use of appropriate multicultural and culturally responsive strategies will be offered. Language loss occurs for a variety of reasons, yet none of them serve ELLs, their families, or future societies well. Among refugee ELLs, language loss contributes to additional loss of culture and cultural identity. It deprives the newcomer ELL of the opportunity to benefit from the greater cognitive diversity and problem-solving skills that are inherent in multilingualism.

References


Christianity may be understood as a critique of and resistance to the exercise of power in the Roman Empire. The great institutions of the Western world emerged within the dialectic of that confrontation. This paper will use the practice of imperial leadership as a foil for understanding the power relations which structure teacher-centred pedagogy. Against this tendency, the biblical notion of kenosis will serve as a foil for understanding the role of the teacher in learner-centred pedagogy.

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ABSTRACT: The New Testament (NT) concept of *kenosis* is developed by Paul in his Letter to the Philippians (Ph) where he uses it to describe the self-effacement of Jesus Christ. Paul’s Christ is presented as a man, who although of divine origin, sets aside his power and assumes the condition of a slave. Offered as a model for every form of human leadership, the Messiah/King is said to *empty* himself (the Greek verb used in Ph 2 is *ekenosen*). This choice of self-effacement is implicitly set against the backdrop of the glory- and power-seeking model of Roman leadership. In this presentation, we will argue that the Roman style of leadership has informed pedagogical practice in religious education in the West since at least the time of St Augustine (354-430) and that it continues to be the source of a hidden curriculum in religious education today. The juxtaposition of the self-effacing pedagogue of primitive Christianity and the power-wielding teacher of the Imperium will be presented with the help of the research of such scholars as Richard Horsley, John Dominic Crossan, James C. Scott and Maria Montessori.
Primary School Teachers’ Mathematics Anxiety, Mathematics Teacher Efficacy, and Mathematics Avoidance: The Case of Trinidad and Tobago

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ABSTRACT
There is no shortage of research about mathematics anxiety, mathematics teacher efficacy and mathematics avoidance among teachers outside of the Trinidad and Tobago context, and the resulting knowledge gap about how these constructs affect teachers in Trinidad and Tobago, is disconcerting. Teachers’ beliefs about Mathematics influence students’ experiences with Mathematics, and their beliefs and attitudes towards Mathematics. Primary teachers in Trinidad and Tobago teach Mathematics regardless of their confidence, competence, or desire to avoid it. This study explored interrelationships among mathematics anxiety, mathematics teacher efficacy, and mathematics avoidance of a representative sample of primary teachers in Trinidad and Tobago, to determine if these constructs varied by teacher age, gender, and number of years of teaching experience. Participants’ ages ranged from 30 to 59 years, and had taught at primary school for at least five years. Of the 63% Teachers College graduates, only 12% had specialized in Mathematics. Participants completed a self-reporting questionnaire related to mathematics anxiety, mathematics teacher efficacy, and mathematics avoidance. Data were analyzed using STATA12. Pearson correlations coefficients determined the nature of the relationships among the three constructs. Univariate ANOVA determined if constructs varied by participants’ gender, age, and years of teaching experience. Regression analyses examined if gender, age, teaching experience, and Mathematics grade significantly predicted mathematics anxiety, and whether mathematics anxiety significantly predicted mathematics teacher efficacy. Participants reported positive feelings about mathematics generally. Low mathematics anxiety was associated with strong mathematics teacher efficacy and low mathematics avoidance. Male teachers were more math-anxious, and significantly more math-avoidant than females, but males and females differed marginally in their mathematics teacher efficacy. Age and years of teaching experience were not factors for mathematics anxiety, mathematics teacher efficacy, and mathematics avoidance, but males reported significantly higher mathematics avoidance than females (F(1, 66) = 6.865, p < 0.05). Mathematics attainment was the only significant predictor of mathematics anxiety (β = 0.347); and mathematics anxiety significantly predicted mathematics teacher efficacy (β = 0.66). Further research in Trinidad and Tobago is recommended to determine what Mathematics primary teachers know and how they know it, and what pedagogical practices they employ to teach Mathematics. A mixed-method research design is recommended to produce a holistic understanding of these constructs, and to understand how teachers’ early classroom experiences with Mathematics have affected females and males differently, and how these experiences are manifested in the classroom. Research must inform teacher training programs so that components that address mathematics anxiety may be included or strengthened. Equipping teachers with tools to manage their anxiety will strengthen their teacher efficacy, thus increasing the number of efficacious primary teachers in Trinidad and Tobago.

Keywords: mathematics anxiety, mathematics teacher efficacy, mathematics avoidance, primary teachers
Teacher Evaluations: Value Added Analysis, Measures, and their Impact

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Abstract
Teacher evaluations based on student growth as measured by standardized tests are being used to determine the future of P-12 teachers without utilizing appropriate value added measures in the analysis. Teacher evaluations and student tests are essential, however multiple measures and factors often not considered need to be taken into account in the use of student test scores to evaluate teachers. In a single environment, learners and teachers themselves vary in beliefs, attitudes, perceptions, self-efficacy, motivation, learning styles, cultural influences, and demographics or social identities (e.g., sex, sexual orientation, ethnicity, ability/disability, socio-economic status, religion/spirituality, etc.). If one examines the many levels of diversity just noted, several (e.g., attitudes, motivation, self-efficacy, etc.) are typically not considered in calculations since data are not collected for them. This paper advocates use of multiple measures in evaluation of teachers.

Teacher Evaluation Systems

Teacher evaluation systems have been based on narratives and classroom observation without providing objective criteria and often without regard for student outcomes. In recent years schools have been required to submit standardized student assessment data as part of the teacher evaluation system based on the assumption that assessment data can provide credible information on progress and judge the quality of the teachers. While teacher evaluation needs to be overhauled, a comprehensive system of support and evaluation must be provided as part of this process. Most people understand that one-time assessments are not a fair way to assess learning, neither are they equitable to evaluate teachers. A high quality system should include professional development and clear and meaningful assessments that take into account numerous elements of variability impacting schools, students, and student achievement.

Teachers are the most influential school-based factor on student achievement (Rivkin, Hanushek, & Kain, 2005; Sanders & Horn, 1998; Sanders & Rivers, 1996). Although studies have shown that some teachers are more effective than others at helping their students achieve at high levels, most indicators of teacher quality (e.g., credentials, characteristics, and observable practices) are generally poor predictors of student learning growth (Goe, 2007; Rice, 2003; Wayne & Youngs, 2003). Teachers’ scores on observation instruments have not been highly correlated with student learning growth (Weisberg, Sexton, Mulhern, & Keeling, 2009). However, it is not surprising that correlations are weak when the factors to be measured with observations are not well specified or when raters are poorly trained or inadequately monitored for scoring consistency after training.

These concerns lead to other issues in the school systems. While student achievement is a key value or goal of schools and good teaching should be clearly identified, instruments to identify good teaching are often lacking validity. The effects of the teacher evaluation systems must be evaluated in relation to its intended impacts on teaching and learning and social justice. P-12 education should also be concerned with many issues related to social justice, which are often impacted by teacher evaluations.

While teacher evaluations systems should look at teaching in light of student learning, value added models (VAM) are unstable and do not take into account the multiplicity of factors impacting student achievement. Student growth is often defined as the average gain in student test scores from one year to the next. It compares the test performance of a group of students in
one year with the test performance of the same group of students the year before. If all students are promoted normally, it equivalently compares the test performance of a group of students in one grade with the test performance of the same group of students in the previous grade. The reality is that not all students are promoted normally so equivalency by group by grade is fallacious and does not take into account social or cultural values or outcomes.

In attainment measures, systematic errors are present because schools serving low-achieving students are destined to fail and VAM cannot take into account all of the variables impacting student learning. This is also true because factors outside of the school's control that affect student learning are not taken into account in most of these measures. Random errors in growth measures are also present because when a student takes the first exam (as the baseline for future progress), no one can be certain that he/she tested at his/her full knowledge level. To use an example from sports, when athletes take baseline tests designed to measure their responses prior to the beginning of a sport season, players are using delayed responses so if they do suffer mild concussions, it will not make such a significant impact on their responses and they will be less likely to be withheld from competition.

So, if all future growth is based on an inaccurate first test, then how can this measure be an accurate picture of real growth? Value-added assessment, a statistical process for looking at test score data, is one technique that researchers have been developing to identify effective and ineffective teachers and schools, but not all factors are taken into account. Educators are concerned because their evaluations will be tied to results of their students’ standardized testing, which are used in value-added calculations, while other factors, such as the experience and training of the teachers, are diminished, if used at all.

Several school districts in the United States including Dallas, Houston, Denver, New York, and Washington, D.C., and several states such as Ohio, Tennessee, and Minnesota have begun using student achievement gains as indicated by annual test scores (adjusted for prior achievement and other student characteristics) as a direct measure of individual teacher performance. These student-test-based measures are often referred to as “value-added” measures. However, even supporters of policies that make use of value-added measures recognize the limitations of those measures. Among the limitations are, first, that these performance measures can only be generated in the handful of grades and subjects in which there is mandated annual testing. Roughly one-quarter of K–12 teachers typically teach in grades and subjects where obtaining such measures is currently possible. Second, test-based measures by themselves offer little guidance for redesigning teacher training or targeting professional development; they allow one to identify particularly effective teachers, but not to determine the specific practices responsible for their success. Third, there is the danger that a reliance on test-based measures will lead teachers to focus narrowly on test-taking skills at the cost of more valuable academic content, especially if administrators do not provide them with clear and proven ways to improve their practice. The only definition of teacher effectiveness that seems to matter in the discussion is not comprehensive, as "increasingly, policy conversations frame teacher effectiveness as a teacher's ability to produce higher than expected gains in students' standardized test scores" (Goe, Bell, & Little, 2008, p. 5). Because student growth scores are relative, the evaluation system needs to guard against normative ratings that create unnecessary competition and can lead to a lack of willingness to share information with other teachers. Another significant factor is that teachers have filed suit in a half-dozen states to block complicated new evaluation formulas that in some cases have rated them based on the test scores of students they never taught. Parents have also protested that their children have been required to take tests created for the sole
purpose of evaluating teachers.

According to Kaitlin Emma (2014), Washington, D.C., which was one of the first districts to incorporate student test scores in teacher evaluations, is not using those scores to rate teachers in 2015. It is pausing to give everyone a chance to get used to new exams linked to the Common Core academic standards. Maryland, New Jersey and Texas are all taking extra time to incorporate student test scores and Washington state legislators have refused to accept the administration’s vision of an acceptable evaluation system, while New Mexico is adjusting its system after flawed evaluations, based on erroneous data, caused an uproar in districts statewide.

Teacher Evaluations and Value Added Measures

One of the most important questions about value-added assessment is whether the estimate obtained from a value-added model can actually be called a teacher effect. Some key questions need to be addressed about teaching practices and evaluations. What changes in teaching practices are reported by teachers and documented by observational measures and student ratings? What changes occur on high-stakes achievement tests compared to the baseline year, and are these effects confirmed by independent audit tests? What is the overall impact of these on social justice?

The general theory of action for test-based teacher evaluation systems holds that using student growth to measure teacher effectiveness will improve the quality of education provided to students and hence will improve student achievement. Value-added measures (VAM) a teacher’s effectiveness on a group of students’ academic growth from year to year. Value-added uses a student’s own academic performance as a basis for determining his or her academic growth and is not related to a student’s socioeconomic status or other personal characteristics that typically confound achievement-based measures.

Value-added models track the amount of “value” that a teacher “adds” to student learning from year to year (Amrein-Beardsley & Collins, 2012). Value-added information allows educators to assess their impact on student learning, and it can help initiate conversations about the efficacy of curriculum and instructional practices and programs. Value-added information also allows educators to better identify what is working well and areas for improvement to help individual students and groups of students. Above and beyond the estimates for summative evaluation, there is a wealth of diagnostic information being provided that can be appropriate for educators.

Proponents of test-based teacher evaluation argue that growth in student achievement is the ultimate criterion for judging teacher effectiveness. They believe that value-added modeling of test-score data can do a better job of identifying the best and worst teachers compared to current indicators and that these methods are sufficiently robust in accounting for initial student differences to provide actionable data (Gordon, Kane, & Staiger, 2006). People who oppose the use of VAM claim that neither standardized tests nor VAM’s statistical methodology have sufficient validity for the high-stakes purpose of individual teacher evaluation (Braun, Chudowsky, & Koenig, 2010) and teacher pay.

Using value-added models in teacher evaluations has become the hot issue, with several states passing laws making this sort of measure of student achievement a significant factor in teacher evaluations--at least 50 percent in some states (Institute for Competitive Workforce, 2011). There is more to being an effective teacher than raising standardized test scores, yet test scores have gained widespread acceptance among the public as the key indicator of performance.
Value-added models attempt to isolate the impact a teacher has on students' achievement from other factors of interest, such as student characteristics (Hull, 2011). For value-added modeling to work, tests must be vertically scaled according to Doran & Fleishman (2005). Vertical scaling is a statistical process that connects different tests and places them on the same type of measurement making it possible to measure growth over time. For example, one cannot measure a person's height in inches one year and in meters the next year without adjusting the scale.

It is important to consider the human side of teaching and learning in measuring teacher effectiveness. "Teaching consists of classroom interactions among teachers and students" and that teachers facilitate "students' achievement of learning goals" (Hiert & Grouws, 2007, p. 372). What many of these models fail to take into account are that teacher evaluation should be used for teacher development with use of student achievement scores factored in based on a factor analysis utilizing critical elements such as poverty, language ability, and other similar issues impacting students, schools, teachers, and student achievement.

Social Justice

A central question that must be addressed is how do we fairly account for the effect of diversity and other factors such as poverty in classrooms? Social justice is generally equated with the notion of equality or equal opportunity in society. There is an extensive amount of attributes beyond cultural differences that must be taken into account in social justice and student achievement. In a single environment, learners and teachers themselves vary in beliefs, attitudes, perceptions, self-efficacy, motivation, learning styles, cultural influences, and demographics or social identities (e.g., sex, sexual orientation, ethnicity, ability/disability, socio-economic status, religion/spirituality, etc.). If you look at the many levels of diversity just noted, several (e.g., attitudes, motivation, self-efficacy, etc.) are typically not considered in calculations since data are not collected for them.

Value-added models cannot fully control for variables such as transient populations of students, students’ demographic backgrounds, or poverty because neither teachers nor their students are randomly assigned to either schools or classes, making it difficult to separate a teacher's impact on students from other non-observable measures, such as a student's motivation or help at home (Hull, 2011). According to Hernandez (2011) 22 percent of children who have lived in poverty do not graduate from high school compared to 6 percent of those who have never been poor. The drop-out rates for students of color who live or have lived in poverty are much higher than those for other students. This supports the most significant finding from a 2003 Rand Corporation investigation into value-added models, which concluded that because such models [VAM] might not control for all variables of interest, "student achievement can never be shown conclusively to be due to individual teacher effectiveness" (McCaffrey, Lockwood, Koretz, & Hamilton, 2003, p. 3).

According to Compton-Lilly (2014), Common Core Standards do not tap into nor do they assist in reducing the achievement gap. The real crisis is not a lack of common core standards but racism and poverty. These are not being taken into account in the teacher assessment processes currently being utilized. Compton-Lilly (2014) goes on to say that privileging one way of being literate and one way of making sense of texts the standards fail to recognize and value those students who embody various funds of knowledge reflecting diverse families and neighborhoods that may differ from the expected norm.
Conclusion

The whole point of VAM is to create a more level playing field in order to make more fair comparisons among teachers. Policymakers and educators understand that that raw achievement test scores tend to rank schools by the socio-economic status of the students served and are not fair, or consistent measures of teacher success. The very name, value-added, reflects the desire to isolate the unique contribution of schools or teachers to achievement outcomes. One of the most important questions about value-added assessment is whether the estimate obtained from a value-added model can actually be called a teacher effect.

According to Darling-Hammond (2012), the use of any value-added measure should take into account characteristics of the students and the context that affect student achievement gains. Such factors include parent education, special needs of students (English learner and special education status, poverty, homelessness), student attendance, and classroom composition, in addition to the individual student’s prior achievement. In particular, studies show that classroom composition greatly affects teachers’ value-added scores. This information should be taken into account both in the models and in the overall analysis of information for the ultimate evaluation judgment. Other factors that may make a significant difference include class size, the quality and availability of curriculum materials, whether students also receive tutoring or related instruction from another teacher, etc. If these factors are not accounted for in the value-added model, they should be accounted for in the overall evaluation of a teacher.

Value-added measures should be used only when there is a sufficient sample size and multiple years of data. Studies find that many teachers have few students linked to them for whom data is available for both prior-year and current-year achievement. Other students who are mobile may have spent only a short time in a given teacher’s classroom. Both of these are sources of considerable error. Year-to-year instability in teacher rankings is also very high. Many experts suggest that there should be at least 50 students (who have been with the teacher for a large majority of the year in each case) and at least 3 years of data to use in estimating a value-added score. Even with these considerations, it is important to recognize that multiple years of data may mask the year-to-year instability of scores, but do not eliminate the causes of such instability, which may often include the composition of classes that teachers teach.

The validity of teacher effectiveness ratings in any given state or district or school will depend on several factors such as the particular achievement measures used to assess the outcomes of learning, the adequacy of prior achievement data, the assignment of students to classrooms, the concurrent effects of other learning resources, the particular VAM specifications, the quality of observational and other measures of effectiveness used in the system, and on the judgments involved in weighing evidence from multiple measures. At best, existing research offers insights about the potential threats to validity that need to be addressed in order to create systems for analysis and evaluation that are more fair and take into account social and cultural variables for social justice. The potential nightmare continues with the logistical and technical concerns that are cropping up once states and districts have revised models for teacher evaluation, which include value-added measures. To implement those, they will need to create new integrated systems for managing teacher-performance. Without technical in-house expertise they will need to rely on outside contractors whose expertise is also evolving in this area (Sawchuk, 2011). Strong evaluation systems need principals and other evaluators with deep knowledge of teaching and learning, as well as an understanding of how to evaluate teaching, how to give useful feedback, and how to plan professional development that supports teacher learning.
The end-of-year test scores do not show how much students learned that year in that class with that teacher. Measures that take into account where students started are an improvement however, such measures of growth are only a starting point. Making judgments about individual teachers requires sophisticated analyses to sort out how much growth may be caused by the teacher and how much is caused by other factors. For example, students who are frequently absent tend to have lower scores regardless of the quality of their teacher, so it is vital to take into account how many school days students are present. Thus, to be fair and to provide trustworthy estimates of teacher effectiveness, value-added measures require complicated formulas that take into account as many influences on student achievement. All value-added models have degrees of error associated with them, and while researchers say that additional years of data help make the estimates more precise, debate continues within the research community about other aspects, such as whether the models should control for student demographic characteristics, which characteristics to include, and how to include these.

According to Whitehurst, Chingos, & Lindquist (2014), improvements are needed in how classroom observations are measured if they are to carry the weight they are assigned in teacher evaluation process. It is clear that evidence-based recommendations should be aimed at improving the fairness and accuracy of teacher evaluation systems. In order to better understand this key findings and resulting recommendations include: adjusting teacher observation scores and student test scores based on student demographics, states and districts should provide prediction weights based on statewide data for individual districts to use when calculating teacher evaluation scores, and at least one annual observation of a teacher each year should be conducted by a trained observer from outside the teacher’s school. It is helpful to remember that a teacher is just one influence on student achievement scores, and classroom observations are only one way to assess the quality of a teacher’s instruction. The nature of the relationship between practices and achievement supports teacher evaluation and development systems that make use of multiple measures.

The inclusion of a school value-added component in teachers’ evaluation scores negatively impacts good teachers in bad schools and positively impacts bad teachers in good schools unless all factors are taken into account. This measure should be eliminated or reduced or totally revised in teacher evaluation systems. Hopefully the research will be utilized that supports student growth and takes into account the multiple number of factors involved in the Valued Added Assessment process which will yield social justice for students and teachers. One of the more popular formulas to measure teacher effectiveness by state tests is called “value-added measure,” or VAM. This is a beginning to examine factors impacting student performance and takes into account some of the factors outside of the control of schools and teachers.

States and districts must construct integrated systems for teacher-performance that take into account numerous variables that impact student achievement and the VAM is a start. Effective evaluation systems require multiple elements including development, testing, professional development, inclusion of VAM, and systematic and continuous monitoring. Even for states and school districts that have experience measuring student growth as part of their school accountability systems, making the leap to individual teacher estimates is not as simple as flipping a switch. In general, experts say that drilling down to classroom and teacher value-added estimates demands data of a far higher quality than is typically available or used. When they attempt to control for variables such as a student’s income, race and English-language fluency it can be more worthwhile than standardized test scores. The formulas can then include numerous variables and be used to measure student proficiency and student growth over time.
References


CULTURAL COMPETENCY: THE EFFECTS OF CULTURE SHOCK AND LANGUAGE STRESS IN HEALTH EDUCATION

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Abstract

Diversity among refugee and immigrant populations in American schools has made it necessary for health educators to understand the health needs and health-seeking behaviors, attitudes, cultural nuances, and perceptions about health of various groups. Two strategies to accomplish this are the Ulysses Syndrome and Cultural Competency Continuum. The Ulysses Syndrome focuses on the often-misunderstood psychosocial challenges and stress experienced by immigrants in their departure from the home country, and the adaptation to a different environment. The Ulysses Syndrome forms the gateway between mental health and mental disorder. The other means is through developing cultural competency. Understanding the 6 levels of the cultural competency continuum enables health educators to integrate cultural proficiency practices into individual health education practices. Understanding diversity and the Ulysses Syndrome and developing cultural competence is a long-term and on-going process. This process is complex, but essential in order to build a framework from which to address the health needs of a diverse society.

Keywords: diversity, cultural competence, Ulysses Syndrome, immigrants, culture, health education

Diversity and Health Education

There are currently significant demographic changes taking place in the United States that are having a direct impact on health education and public health. Data from the Census Bureau (2010) show that minority populations have grown dramatically with immigrants coming from all over the world. This diversity among immigrant populations in American schools has made it necessary for health educators to understand the health needs and health-seeking behaviors, attitudes, cultural nuances, and perceptions about health of various groups. To gain this understanding requires acknowledgement of the Ulysses Syndrome and awareness of cultural competency. The Ulysses Syndrome focuses on the often-misunderstood psychosocial challenges and stress experienced by immigrants in their departure from the home country, and the adaptation to a different environment. The process of utilizing the principles of the Ulysses Syndrome and developing cultural competence is complex and on-going, but crucial to building a framework to address the health needs of a diverse society.
**Diversity and Culture**

It is important to begin by defining both diversity and culture. Diversity is a dynamic philosophy of inclusion based upon respect for cultures, beliefs, values, and individual differences of all kinds. Diversity respects and affirms value in differences in ethnicity and race, gender, age, sexual orientation, socio-economic status, linguistics, religion, politics and special needs (Betancourt, Green, & Carrillo, 2002). Diversity is also viewed as a commitment to understanding and appreciating the variety of characteristics that make individuals unique, promoting an atmosphere that embraces and celebrates individual and collective achievement. (The University of Tennessee Libraries Diversity Committee, 2003). A new vision for diversity is needed that also examines not only the typical racial/ethnic or gender composition of a population, but also how different groups perceive and interact with the environment, political and ideological beliefs, and equity in access to opportunities and care (Clayton-Pedersen, Parker, Smith, Moreno, & Teraguchi, 2007).

Culture is a concept that is organic and constantly evolving. Culture is essential for the existence of a society and is an integral part of every society (Tylor, 1871). Culture is comprised of values and beliefs (Kroeber & Kluckholn, 1952); is learned, shared, and transmitted from one generation to next (Beyer, 2003; Chamberlain, 2005) and helps organize and interpret life. It includes thoughts, styles of communicating, ways of interacting, views on roles and relationships, values, practices, and customs (Robins, Fantone, Hermann, Alexander, & Zweifler, 1998; Donini-Lenhoff & Hendrick, 2000). Culture also includes a number of additional influences and factors, such as socioeconomic status, physical mental ability, sexual orientation, and occupation (Betancourt et al., 2002). According to Cross, Bazron, Dennis, and Isaacs, (1989), culture impacts our lives as it determines on the most fundamental level the way in which we perceive our world, how we assign meaning to what we see, and how we respond to it. People of one culture share a specific language, traditions, behavior, perceptions and beliefs respective of their culture. Culture gives them an identity, which makes them unique and different from people of other cultures.

Our understanding of our own culture and cultures other than our own will impact how we interact with people not of our culture. Limited understanding can lead us to making mistaken assumptions, judgments and placing unclear expectations on others. Cultural misunderstandings and conflicts arise mostly out of culturally-shaped perceptions and interpretations of each other's cultural norms, values, and beliefs. Although many dimensions of culture are universal, there are many dimensions along which cultures differ. This variance in basic values results in cross-cultural miscommunication and strife. Each culture also defines health in a unique way. Health is defined by cultures as a group’s view of the physical, mental, emotional, and social components required in a healthy person (Cushner, 2002; Giger & Davidhizar, 1991). Culture is a very important aspect and significant part of our lives, personally and professionally, and a crucial factor for ensuring effective and efficient services to our communities. Therefore, it is
essential for health educators to understand the effects of culture on health and educate themselves further about the particular needs of various ethnic groups.

Immigrant Populations

Of major concern to health educators in the United States are the health needs of immigrant populations. According to the International Organization for Migration an immigrant is a non-national who moves into a country for the purpose of settlement (2004). When examining immigrant groups, it is important to determine whether the individual is a migrant, first generation immigrant, or refugee; the length of time he or she has lived in the country and the reason precipitating the immigration. Immigrant populations are very diverse; originating from different regions of the world, representing many cultures and languages, migration patterns, legal status and reasons for migrating. Immigrants’ education levels and occupations range from the illiterate manual laborer to the high-skill professional.

Not surprisingly, this diversity translates into different health profiles for sub-populations of immigrants (UNSD, 2013). The increasing population growth of cultural and ethnic communities and linguistic groups, each with its own cultural traits and health profiles, presents a challenge to health education. A major way to address this challenge is by improving health educators’ understanding of the health needs of newly arrived immigrant populations.

Migration and the Ulysses Syndrome

Migration is a complex undertaking with often-profound impact on humans. For all immigrants, there is an adjustment process with specific stages they experience as they strive to integrate into a new cultural setting (Cushner, 2002). Atkinson, Morten, & Sue (1989) identify specific stages of adjustment. Newcomers first enter the honeymoon or conforming phase where the new intercultural experience appears to be heaven. Experiencing and adjusting to the physiological and psychological changes moves the individual into the conformity stage. In this stage, cultural differences result in tensions and frustrations which may lead into the stage of dissonance. This is a critical stage as ethnocentric reactions emerge and subjective cultural factors collide (Trifonovitch, 1977). Then, there is a stage of resistance and immersion, characterized by hostility, or by a strong withdrawal and search for a sense of identity. Immigrants begin to emerge from this reactive, hostile stage as they begin to understand and accept cultural subjectivity. In the next phase, the stage of introspection there is a concern and empathy not only toward own self, others of the same minority group, but also toward others of different minority groups (Atkinson, et.al., 1989). It is considered a relief phase, accompanied by humor and joy and helps individuals begin to understand subjective cultural aspects. In the final stage, the stage of integrative awareness, there is a selective appreciation and selective trust towards some of the members of the dominant group. This is known as the stage of home or adaptation, when people are able to interpret and interact from both cultural perspectives (Cushner, 2002).

It is important to recognize that people travel through these stages in multiple ways and varying timeframes. Most people require sufficient time to move through the stages and understand subjective cultural changes in enough depth to live effectively. Understanding this process is
essential for health educators. Educators should expect that families and individuals will experience multiple changes and reactions that will impede their learning and full functioning.

For millions of individuals, immigration today, presents stress levels of such extreme intensity that they exceed the human capacity of adaptation (Achotegui, 2009). These persons are, therefore, highly vulnerable to the immigrant syndrome with chronic and multiple stress, known as the Ulysses Syndrome. The term Ulysses refers to the Greek hero who spent ten years living in a distant land suffering countless adversities, and another ten seeking to return to his home city. (Homer, 700 BC). The significance of Ulysses’ story is such that the term Odyssey is defined as a complex and treacherous journey in multiple languages and multiples cultures around the world.

The Ulysses Syndrome is an emerging health concept that focuses on the often-misunderstood psychosocial challenges, including varied forms of recurring and protracted stress experienced by immigrants in their departure from the home country and in the adaptation to a different environment. The key contribution of this concept is the elucidation of the direct correlation between the extreme levels of stress and the onset of psychological and psychosomatic symptoms. The delimitation and denomination of the Ulysses Syndrome contributes to the avoidance of the incorrect diagnosis of many immigrants as depressive (Achotegui, 2009).

According to Achotegui, the most important stressors faced by newly arrived first generation of migrants are: a) social isolation, loneliness and forced separation, especially in the case when an immigrant leaves behind his or her spouse or young children; b) the sense of despair and failure of the migratory goals and absence of opportunity; c) the survival factor to feed oneself, to find a roof to sleep under; d) the afflictions caused by the physical dangers of the journey undertaken, and the typical coercive acts associated with journeys by groups that extort and threaten the immigrants; and e) discriminatory attitudes in the receiving country including in the case of undocumented immigrants, the constant fear of detention and deportation (Achotegui, 2009). This combination of loneliness, the failure to achieve one's objectives, the experiencing of extreme hardships and fear forms the psychological and psychosocial basis of the Ulysses Syndrome.

As new immigrants deal with these factors they move through seven levels of grief: 1) grief for the family and loved ones; 2) grief due to encounter with a different language and the subsequent inability to communicate needs, feelings and ideas; 3) grief of culture, especially customs, sense of time, religion, values; 4) grief of homeland, landscape, the light, the temperature, the colors, smells; 5) grief of social status; 6) grief in relationship to the peer group along with prejudices, xenophobia or racism; and 7) grief due to risk regarding physical integrity such as dangers in the migratory journey, dangerous jobs, or changes in diet (Achotegui, 1999). These seven levels of grief can be lived in simple, complicated or extreme way, as the response to the efforts of the migrant to adapt to the new environment (Achotegui, 2012).

As they undergo these various levels of grief, the lives and livelihoods of first generation migrants are often threatened by various health problems that arise from the migratory and adaptation processes. The health effects are multiplied because the stressors are intense, multiple and chronic, appear out of their control, occur with little social support and result in symptoms
such as sadness, recurrent nervousness, irritability, migraines, weariness, insomnia, fatigue, gastric and osteo-physical complaints. The stressful experiences during migration, the experience of becoming a racial/ethnic minority, subjected to discrimination and racial conflict with other groups, damages the mental health of migrants and appears to have long lasting effects on the mental health of immigrants (Ornelas & Perreira, 2013). The health system often does not provide adequately for these patients: either because this problem is dismissed as being trivial, or because this condition is not adequately diagnosed.

In the United States, biomedical approaches view these symptoms not as a reactive response to the predicaments met by the newcomers, but as signs of depression. First generation immigrants are treated as being depressive or psychotic with a series of treatments that instead of mitigating, may turn into additional stressors for the immigrant. Standard diagnostic criteria applied to members of different cultural groups pose various levels of discriminatory practices. While in ethno-medicine the existence of the spiritual world is widely considered, standard diagnoses fail to capture the knowledge, attitudes, practices, values, and beliefs of those from other cultural groups. The diagnosis of depression fits into a particular Western medical and cultural model, which reduces the psycho-social problem to that of an individual who in the diagnosis, is abstracted from a socio-economic content, and then held solely responsible for his/her mental wellbeing (Foucault, 2005).

It is of paramount importance to state that the symptoms suffered by these immigrants pertain to the mental health sector of healthcare, which is broader than the psychopathology. The table below highlights how understanding of the Ulysses Syndrome forms a gateway between mental health and mental disorder.

**Table 1: Ulysses Syndrome**

<table>
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<tr>
<th>Mental Health</th>
<th>Ulysses Syndrome</th>
<th>Mental Disorder</th>
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<td>Mental health is a state of well-being in which an individual realizes his or her own abilities, can cope with the normal stresses of life, can work productively and is able to make a contribution to his or her community. In this positive sense, mental health is the foundation for individual wellbeing and the effective functioning of a community.</td>
<td>A series of symptoms that affects migrants confronted with multiple and chronic levels of stress. Note that if they are offered a job or an opportunity to move out of these levels of stress, they respond positively and take the opportunity. Therefore, they are not “depressed”. The objective of intervention would be avoiding the worsening conditions, so that they do not suffer a standard mental disorder.</td>
<td>A mental disorder or mental illness is a psychological or behavioral pattern generally associated with subjective distress, anxiety, depression, or disability that occurs in an individual, and which is not a part of normal development or culture. Such a disorder may consist of a combination of affective, behavioral, cognitive and perceptual components.</td>
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Social support becomes increasingly more important in maintaining the mental and physical health of immigrants and their communities. Migrants lacking the necessary healthy support are exposed to a higher risk of moving into severe mental disorders (Achotegui, 2012). Although, in comparison to first generation immigrants, second generation immigrants in the United States are
more likely to achieve higher earnings and are less likely to live in poverty (U.S. Census Bureau, 2010) increased health does not always follow. For example, depression in Latinos is highly correlated with the amount of years spent in the United States. Latinos have very strong family bonds which, in spite of economic, educational, and lower socioeconomic status, help them move forward in life. However, as Latino immigrants acculturate it becomes increasingly harder to maintain those family connections, stress levels rise, and the children begin to lose their cultural connection in favor of developing an American lifestyle, and the incidence of illness increases (Chang, Garcia, Huang & Maheda, 2010). Building social cohesion in communities is essential in maintaining better health. Social support has a protective effect in preventing or decreasing the risk of development of illness, especially in second generation immigrants confronted with acculturation and the impact of oppression and marginalization (Unnatural Causes, 2008; Marmot & Wilkinson, 2006).

The Ulysses Syndrome poses a powerful challenge to dominant approaches. It is a non-clinical and more comprehensive assessment of the plight of newly arrived immigrants who suffer from chronic and multiple stress syndromes. This calls for prevention, not just at the individual level, but also at the community level at large. Within each community, the health educator must utilize programs and resources that address the cultural values, beliefs and practices of that group or groups. A key strategy is to utilize the experts in the community and develop community with their input. The Community Health Workers (CHWs)/Promotoras model utilizes natural leaders in each community. CHWs act as cultural “bridges” between communities and institutions. They are trained to deal with the health problems of community members, and to work in close collaboration with the health services. The CHWs / Promotoras, many of whom have had the same or similar experiences, have developed strong levels of resilience and play a vital role in supporting those going through the migratory process, to achieve their goals without compromising their health condition (Waitzkin, 2006). Based on their own experiences, CHWs can fortify the personal resilience of newly arrived migrants, by employing relevant techniques from their common culture to alleviate grief and generate a sense of empowerment (Schoeller-Diaz, 2012).

With the culturally and linguistic appropriate approaches used by Community Health Workers (CHWs) / Promotoras and culturally competent health educators, the first generation of immigrants are not left in isolation, but integrated and made aware of the importance of keeping and maintaining strong ties with his/her language and culture as the most empowering factors in the overall wellbeing (Diaz-Cuellar, 2007). By identifying community problems, developing innovative solutions and translating them into practice, “CHWs/Promotoras can respond creatively to local needs and achieve dramatic improvements by reaching the “hard to reach” community members and linking them to resources and advocating on their behalf” (Diaz-Cuellar, 2007, p.197).

Finally, to work most effectively in immigrant communities, health educators must develop a basis of trust with immigrants and families. To develop that trust, health educators must first understand the stages of an immigrant’s journey to adaptation in a new country and acknowledge the multiple and chronic stressors associated with the immigrant experience. Educators must attain “an ethno-relative perspective, an expectation that one will have significant adjustments to make when living and working with others as well as an ability to understand components of
one’s own and others’ subjective culture” (Cushner, 2002, p. 88). Health educators who are working with immigrant populations need to advocate for a socio cultural approach using culturally sensitive health educators alongside indigenous linguistically and culturally competent community health educators or Promotoras for the identification and help to newly arrived migrants experiencing the Ulysses Syndrome. It is imperative that the health issues related to high levels of stress associated with immigration and the right to health be addressed.

**Developing Cultural Competence**

Cultural competence is based on the core principles of culture. These principles include that culture is a predominant force in peoples’ lives so a person cannot, not have culture; people are served in varying degrees by the dominant culture; people have personal identities and group identities; diversity within cultures is vast and significant; each group has unique cultural needs that cannot be met within the boundaries of the dominant culture. Cultural competence manifests in individuals, communities, schools, and organizations and occurs developmentally in all settings. The role of the health educators is to help individuals and entities move positively forward towards cultural competency. Health educators, in fact, have an inherent responsibility to become culturally competent (Luis & Perez, 2003).

With those understandings, culturally competent health educators first need to be aware of their own cultural identity, cultural values and cultural assumptions, and determine how their identity and value orientation might affect their professional practice and relationship with other health educators from different ethnic groups.

As cultural competence is having the capacity to function effectively within the context of the cultural beliefs, behaviors, and needs of clients and their communities, establishing relationships with the individuals and family before, during and after care are essential. Communication is essential, but communication can be inhibited by language barriers, literacy levels, cultural beliefs and alternative health beliefs or practices. Since cultural competence is a developmental process, it requires an understanding of the several key social determinants including socioeconomic status and its impact on health disparities from a racial and ethnic vantage point; understanding treatment-seeking behaviors based on diversity and cultural nuances specific to cultural and ethnic groups; and taking into account how language can be a barrier to optimal health care, requiring linguistic competence (Chamberlain, 2005).

The need for cultural and linguistic competence is compelling. First, it is a necessary response to the increasing ethically, culturally and linguistically diverse populations and changing immigrant patterns within the United States. Second, it is a tool to eliminate long standing disparities of the health status of people of diverse backgrounds while helping to improve the quality of care and health outcomes. Cultural competency is one of the main ingredients in closing the gap disparities in health care practices. “Quite simply, health care services that are respectful of and responsive to the health beliefs, practices and cultural and linguistic needs of diverse patients can help bring about positive health outcomes” (USDHHS, 2012, p.23). Culture competency practices influence health, healing, and wellness belief systems; how illness, disease, and their causes are perceived; the behaviors of patients/consumers who are seeking health care; the delivery of services by the provider who looks at the world through his or her own limited set of
values. Finally, cultural competence is necessary to meet regulation and mandates of the Federal government.

Cultural and linguistic competence can be taught and learned and requires a commitment to individual personal growth. Challenging one’s social conditioning and cultural incompetence is the essence of the cultural competence as a dynamic developmental process (Goode, 2004). The core principles mentioned above are embedded in the six levels of the cultural competence continuum. They include cultural destructiveness, cultural incapacity, cultural blindness, cultural precompetence, cultural competence, and cultural proficiency. Not intended to be viewed in a linear fashion, the benefits of using the cultural competence continuum is that it enables healthcare educators and public health entities to determine their level of cultural competence and what steps should be considered to achieve cultural proficiency.

The first level, cultural destructiveness, is focused on seeing differences and stomping them out. Any perceived or real differences from the dominant mainstream culture are punished or suppressed and viewed as destructive to cultures and the individuals within these cultures. At this level, it is assumed that one’s race or culture is superior, views other cultures as sub-human and focuses on the elimination of other people's cultures. In essence it is using one’s power to eliminate the culture of another. Examples include the genocide or to the lesser extent exclusion of a group within a health education curriculum.

The second stage of cultural incapacity involves seeing the differences and making them wrong. It is based on the belief in the superiority of one's own culture and in behavior that disempowers another's culture. At this stage cultural differences are neither punished nor supported and there is no attention, time, teaching, or resources devoted to understanding and supporting cultural differences. At this stage, individuals believe in the superiority of one’s own culture and behaving in ways that disempower another’s culture. This can be seen in disproportionate allocation of resources to certain groups, expecting “others” to change, avoidance or exclusion of groups from the health curriculum, or a lack of an equal representation of staff/administrators that reflect diversity in the community. The system remains extremely biased and assumes a paternal posture towards “lesser” races. Such agencies may support discriminatory hiring practices and convey subtle messages to people of color that they are not valued or welcome.

The third stage is cultural blindness where one sees the difference, but acts as if he/she doesn’t. Here, people do not recognize cultural differences among and between cultures; act as if the cultural differences do not matter or are inconsequential. No resources, attention, or time are devoted to understanding cultural differences making the ability to effectively work with a diverse population severely limited. Examples include health educators who experience discomfort in noting differences or who believe their program does not need to focus on cultural issues as they have no diversity. These educators believe everyone learns the same way and that they are not prejudiced as they so not see color in their students. Culturally blind agencies are characterized by the belief that approaches traditionally used by the dominant culture are universally applicable and no changes or adaptations are needed.

The next stage, cultural precompetence, involves seeing the differences, but responding inadequately to redress non-liberating structures, teaching practices, and inequities. Here
individuals have an awareness of the limitations of their skills or an organization's practices when interacting with other cultural groups and attempt with limited skills. At this stage, the health educator might delegate diversity work to others or use a quick fix, packaged short-term program, like an activity during Black History month. Often there are unclear rules, and/or expectations for all staff.

The fifth stage, cultural competence, involves seeing the differences, and understanding the difference that difference makes. Here individuals interact with other cultural groups using the five essential elements of cultural proficiency; assessing culture; claiming the differences and valuing diversity; reframing the differences or managing the dynamics of difference; adapting to the differences and diversity; and changing practices for differences. At this stage, individuals learn to value and respect cultural differences, and attempt to find ways to celebrate, encourage, and respond to differences within and among themselves, while they pursue knowledge about social justice, privilege and power relations in our society. The culturally competent educator seeks advice and consultation from the minority community. At this stage, the health educator supports on-going education of self and others, models behaviors that look at another’s perspective through another lens, and serves as an advocate for all constituencies. There is continuing self-assessment regarding culture, careful attention to the dynamics of difference, and use of multiple adaptations to prodde models to better meet the needs of minority populations.

The final stage of cultural proficiency involves seeing differences and responding positively and in an affirming manner. Individuals focus on esteeming culture, knowing how to learn about individual and organizational culture, and interacting effectively in a variety of cultural environments. Individuals recognize and respond to cultural differences and successfully redress non-liberating structures, teaching practices, and inequities. Here the health educator supports personal change and transformation, serves in alliance for groups other than one’s own; differentiates to the needs of all learners, and incorporates the community in planning and implementing appropriate programs and services.

Cultural competency is an ongoing journey that can be led by health educators who use the cultural knowledge, prior experiences, and performance styles of diverse learners to make learning more appropriate and effective for them. The degree of cultural competence a health educator achieves is based on growth in attitudes, policies, and practice. Attitudes change to become less ethnocentric and biased, policies change to become more flexible and culturally impartial, and practices become more congruent with the culture of the client. To be a culturally competent educator involves that one acknowledges the legitimacy of the cultural heritages of different ethnic groups, as worthy content; builds bridges of meaningfulness; uses a wide variety of instructional strategies connected to different learning styles; recognizes and utilizes the learners’ culture and language in instruction; respects the learners’ personal and community identities; acknowledges learners’ differences as well as their commonalities; promotes equity and mutual respect among learners; and motivates learners to actively participate in their learning (Gay, 2000). Likewise, according to Robins, et al (2011), there are six essential elements of culturally proficient instructors. These are assessing culture by being aware of one’s own culture; valuing diversity by developing a community of learning with students; managing the dynamics of difference by appreciating the power of conflicts and being able to resolve them,
adapting to diversity by committing to continuous learning; and institutionalizing cultural knowledge by working to influence public health organizations and systems.

**Conclusion**

Understanding diversity and developing cultural competence is a long-term and on-going process. To be culturally competent, individuals need to learn about themselves, to learn specific information about a community, and simultaneously learn how to treat each person as a unique individual who is not necessarily representative of his or her whole group. Health educators need to examine specific cultural values of groups as well as individual information about a person’s status as a newcomer, immigrant or refugee. This delicate balance is not easy to learn, but it is essential in order to build a cultural competent framework from which to address the needs of multicultural communities in the United States and it is our best hope for a better future.

Integrating cultural proficiency practices into individual practices of health educators and public health organizational policies is a call to action. When an individual adopts cultural proficiency, the essential elements become the standard practice. People and their organizations become culturally proficient when specific strategies and behaviors are practiced consistently (Robins, et al, 2011). Cultural proficiency is an inside-out approach as it first involves primarily learning about oneself. Consequently, educators who are working to become culturally proficient must continue to learn, seeking information about the people they teach and integrating the culture and context of people with whom they work. One of the most difficult parts of this growth is processing one’s own issues regarding power and oppression. This involves developing the capacity to confront personal issues with power and oppression, to recognize these issues and process feelings, acknowledge biases and prejudices, and draw new conclusions about one’s self (Robins, et al, 2011). In addition, health educators need specific skills and techniques to manage the dynamics of difference to facilitate effective cross-cultural communication and to develop facilitation skills to foster healthy communication, to encourage critical reflection and to engage with the learners as a community of practice.

**References**


Homer. (700 BC). The Odyssey.


Childhood obesity is a major public health problem in the world with African American community being affected even more. The purpose of this study was to conduct a needs assessment using social cognitive theory for planning a childhood obesity intervention in African American children. Four common behaviors that add to childhood obesity are: physical inactivity, spending long hours watching television and computer screen, not eating fruits and vegetables, and drinking sweetened beverages instead of water. Social cognitive theory constructs of outcome expectations, outcome expectancies, self-efficacy and self-control were operationalized for all these four behaviors and a 56-item valid and reliable scale was developed. The scale was administered to 222 African American children in upper elementary grades. Some of the behaviors were predicted by the social cognitive theory constructs such as glasses of water consumed was predicted by self-efficacy and self-control for drinking water ($R^2 = 0.123$). Likewise fruits and vegetables consumed were predicted by self-efficacy for eating fruits and vegetables ($R^2 = 0.083$). For planning health education interventions to reduce childhood obesity in African American children, social cognitive theory provides a useful framework.
1- **Title of the submission:**
   The significance of journal writing in enhancing listening comprehension in Modern Standard Arabic

2- **Name of the authors:**
   Inaam Saad, Ph.D., Magdi Ahmed

3- **Affiliation of the authors:** The Presidio of Monterey, Defense Language Institute, Foreign Language Center “DLIFLC”

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6- **Abstract**
   This paper investigates the relationship between writing and other language skills and attempts mainly to examine the effectiveness of daily journal writing on enhancing the listening and reading comprehension skills in fifty weeks Modern Standard Arabic classes.

   However, in the literature of foreign language learning, writing has long been considered as a supporting skill for learning the grammar, other researchers found many practical aspects illustrating the significance of writing in improving the proficiency in FL. We studied the overall results of three Modern Standard Arabic classes (A, B and C). We studied the influence of daily journal writing on listening and reading comprehension in the end of course proficiency tests and the Defense Language Proficiency Test (DLPT V). Class C was our control group. We studied whether the three language skills are interrelated and do practicing journal writing reinforce the other two skills.

   Our findings showed that the students listening and reading comprehension skills in the six end of course proficiency tests and the DLPT V were strongly correlated with the students writing faculties. Our statistic also revealed significance improvement in the listening and reading comprehension skills of weak students from the two studied classes.
Abstract: This paper describes the successful increase of the graduation rate among talented but financially needy undergraduate students in engineering at San Francisco State University (SFSU) through a focused program of scholarships and academic enhancement activities. With its large enrollment of low-income, recent immigrant, and underrepresented minority students, and its proximity to one of the nation’s leading regions for technological innovation, SFSU offers a unique environment in which to cultivate the next generation of engineering professionals and to support academically talented students who face substantial financial obstacles in completing their undergraduate preparation for careers in the field. The NSF-STEM program allowed us to implement a program of 40 scholarships per year for talented but financially needy engineering students who agree to use the funds to release extra time for their academic endeavors. The proposed student support services, quality educational programs, special program features, as well as the experience and leadership role of the principal investigator, demonstrated this program helped many highly qualified engineering students complete their education.
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In order to be published in the conference proceedings, you must resubmit your paper and/or abstract by October 17th, 2014. Proceedings submissions may be made via e-mail attachment.

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   b. Robin H. Martin
   c. Robin L. Thornburg
3. Affiliation(s) of the author(s):
   a. Auburn University
   b. Auburn University
   c. South Smiths Station Elementary School
4. Address(es) of the author(s):
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5. E-mail address(es) of the author(s):
   a. brocksj@auburn.edu
   b. martroh@auburn.edu
   c. Thornburg.Robin@lee.k12.al.us
6. Abstract and/or full paper:

Spending a substantial amount of time in a setting and developing significant trust relationships with participants can be vital in obtaining in-depth qualitative data. Sometimes regardless of the time spent in the setting, the direct presence of an adult attempting to collect interactive data can alter the authentic behaviors of children. This dilemma can be exacerbated in sporting environments as children are constantly moving during physical activity participation. In this presentation the authors will address positive and negative outcomes of using a GoPro camera worn by children ages 9-10 during a Sport Education unit of instruction. The overall goal of this project was to examine inter-student learning via bodily actions and dialogue to determine performance inhibitors and motivators. Data collection will include videotaped lessons, participant interviews, observations, and field notes. For the purpose of this presentation, methodological implications specifically concerning researcher and participant perceptions of using the GoPro technology will be discussed.

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Poster sessions will last 90 minutes and consist of a large group of presenters. Poster sessions allow attendees to speak with the presenters on a one-to-one basis. If you are scheduled for a poster session, the following supplies will be provided:

-Easel
-Tri-fold display board (36 x 48 inches)
-Markers
-Push pins
-Tape
Six Steps to Effective Virtual Leadership in the Global Entrepreneurial Environment

Dr. Ann Gladys and Mr. Tom McCluskey

Hawaii International Conference on Education

January 2015
Introduction

The era of the global entrepreneur is upon us. There are several factors that lead to this undeniable conclusion. The first is that we live in an increasingly global economy. The latest figures from The World Trade Report show that international trade increased by 5% in 2011, with manufactured goods leading the way with a 6.5% increase (WTO, 2013). While these percentage increases may seem nominal, they are not. Consider that in 2011, the world was just beginning to recover from The Great Recession of 2008 and 2009. At that time, businesses were not in growth mode, but in fact had been paring back operations, which is never a sign of a robust economy. International trade in 2011 outpaced Gross World Product growth, which grew by 3.9% (International Monetary Fund, 2014), meaning that business growth was being fueled by international rather than domestic commerce. Take into account the enormous base figures that define the international marketplace and these percentage increases become more remarkable. In 2011, the top five product groups for world exports, according to the World Trade Report were as follows (WTO, 2013):

<table>
<thead>
<tr>
<th>Product Group</th>
<th>Market Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fuels:</td>
<td>$3.171 Trillion</td>
</tr>
<tr>
<td>Non-Pharmaceutical Chemicals:</td>
<td>$1,500 Trillion</td>
</tr>
<tr>
<td>Food:</td>
<td>$1,356 Trillion</td>
</tr>
<tr>
<td>Automotive:</td>
<td>$1,287 Trillion</td>
</tr>
<tr>
<td>Telecommunications:</td>
<td>$633 Billion</td>
</tr>
</tbody>
</table>

Though the global economy had suffered a severe recession, the desire by countries to negotiate Preferred Trade Agreements (PTAs) continued its two decade-long meteoric rise. By
2011, the number of PTAs more than quadrupled from under 70 in 1990 to over 300 in 2011 (WTO, 2013 International Trade Statistics). Giving further hope for continued growth in international trade is the fact that in 2011, only 16% of all merchandise sales were a result of PTAs (WTO, 2013 International Trade Statistics). The desire for continued global trade remains strong and the opportunities for increases in global trade are substantial.

The growth in international trade is only one factor that has ushered in the era of the global entrepreneur. The other is that public policy decisions made by world governments as well as international organizations have made it almost impossible for businesses not to outsource critical business functions that were once the domain of internal employees. In the United States, the Congressional Budget Office predicts that the Affordable Care Act, passed in 2010, will cause the effective loss of 2.5 million U.S. jobs from 2014-2024. (Congressional Budget Office, 2013). The reason for this is simple; the Affordable Care Act requires businesses with 50 or more full-time employees to provide paid health insurance coverage. As financial analysts at U.S. companies determine that their organizations cannot sustain their operations with these increased costs, they will decrease employee hours so that many workers will not qualify as full-time employees and thus, the company will not be required to pay for and provide health care coverage for them. These employees will need to make up the lost revenue and are very likely to become entrepreneurs by offering their current professional skills as independent contractors to multiple companies rather than work full time for one company that may have hired them prior to the rules of the Affordable Care Act.

The United States is not alone in this trend. As austerity measures continue to be pushed in the Eurozone, governments that once assured lifelong employment protection and benefits for its citizens will no longer do so. To minimize costs, European companies could reduce
employee protection practices and as a result, these European citizens could be forced to solicit their services as independent contractors to domestic or international companies. With this push-pull mechanism in place (the growth in international trade pushing the expanse of a global economy and the increased demand for outsourced and temporary employees pulling workers toward becoming independent contractors), it is easy to see how the stage is set for explosive growth in global entrepreneurialism.

A global economy necessitates the use of a virtual team or workplace, since customers, partners and other stakeholders of the venture may be literally located half a world away. Since the failure rate for entrepreneurs is high (depending upon the source, that rate ranges from 50-90%), it is not enough for an entrepreneur’s business to simply exist in a virtual form, the entrepreneur must establish strong virtual workplace competency to thrive. Even if an entrepreneur’s business is fully domestic, there are distinct advantages to utilizing a virtual workforce that make it compelling to do so. Data on U.S. based corporations supports this fact:

- According to Forrester Research, 34 million Americans work from home. By 2016, that number is expected to reach 63 million – 43% of the U.S. workforce (Forrester Research 2009).
- Forrester Research also concludes that an estimated 3.3 million jobs or $136 Billion in wages could be moved to India, China and Russia by 2015. The growth of the global marketplace necessitates virtual workplace competence (Forrester Research 2009).
- IBM reports that teleworkers are 50% more productive than their office-bound counterparts (Presson, L. 2014).
• Cisco Systems estimates the company has generated an estimated annual savings of $277 million in productivity by allowing employees to telecommute and work virtually (Presson, L. 2014).

• According to figures released by The Wall Street Journal, businesses that allowed employees to work remotely at least three times a month were more likely to realize revenue growth of at least 10% within the past 12 months versus firms without such policies (Shah, N. 2013).

Armed with this information, an entrepreneur, either global or domestic, needs to make virtual workplace competency the highest priority if they want to sustain and grow their venture. Virtual Workplace Competency does not happen by accident, it happens by design. The purpose of this paper is to advise entrepreneurs on how to best design and implement their virtual business practices so that their ventures succeed.

**Six Steps to Effective Virtual Leadership**

One of the most comprehensive and compelling approaches to analyzing the organizational dynamics of change is through the SPELIT Model (Schmieder-Ramirez & Mallette, 2007). When used to assess an organizational shift to a virtual architecture, the SPELIT Model provides a methodology for leadership to give due consideration to the factors involved in the change initiative.

These factors comprise the driving forces in social, political, legal, intercultural, and technical realms via the SPELIT Model (Schmieder-Ramirez & Mallette, 2007) and are critical to understanding the current climate of the organization as well as gaining insight into the forces that may jeopardize the move to a virtual environment. By segmenting the overview of corporate drivers into separate environments, SPELIT offers insight into issues that may be
overlooked through other analyses. The following paragraphs examine each of the SPELIT factors in terms of driving forces in the virtual workspace.

**Social Environment.** The social environment of SPELIT includes reflection on the “social networks, reporting structures, and social cultural norms in an organization” (Schmieder-Ramirez & Mallette, 2007, p. 6). If the current social aspect of an organization is one that is short on social networking among coworkers, or maintains a strongly directive chain of command leadership orientation, or a culture undervalues training and education, the move to a virtual architecture will be more challenging and less likely to be successful. Unfortunately, operational leaders in a company may see multiple organizational layers as a way to grow their organizations and ensure protection of their individual turf. As a result, leaders maintain a strong hold on their employees in a highly structured command and control culture. Old school corporate hierarchies fraught with fiefdoms or dated and archaic technology that impede communication, serve to minimize the social interface so important to establishing viable virtual organizations.

Though research indicates that some 33% of all workers would opt for teleworking over a raise in pay (Snyder, 2012), impediments to operating a successful virtual team may outweigh the benefits of working virtually. Ultimately, what is needed to effectively implement the social aspect of a successful virtual organization is a trusting, empowering, collaborative, and technologically current environment for the virtual workforce that will include training for both the operational leaders as well as the employees (Gladys, 2014).

**Political Environment.** Both Government and commercial entities must deal with political issues. This is especially true when establishing virtual organizations. From the governmental side, the Telework Act of 2010 is a driving force that requires agencies implement
teleworking and report extensively on the outcomes. This can be a two-edged sword for agency leaders. If an agency appears to be successful at telework, internal leaders risk a flattening of the hierarchy and possible loss of political organizational stature. If an agency is unsuccessful at implementing telework, leaders face possible loss of position and power – to say nothing of being dragged through the press for their failures. In this situation both internal and external politics loom large and carry considerable risk.

For the commercial/private sector environments, shareholders, stock analysts, and board members constantly demand positive actions that result in positive changes in the financial posture of corporations. All of these stakeholders influence decisions within companies as well as the future of leaders within the companies. Hence, there is considerable competition among operational leaders to build their respective “empires”, and hoard information so as to be considered indispensable. Given the significant financial savings of migrating employees to a virtual environment of some $10,000 per year per employee (Shahan, 2010), many leaders have no recourse but to implement telework. Once again the two-edged sword appears: if a leader is successful at implementing a virtual organization he or she risks a loss of power and control; and if the leader is unsuccessful in the process of running the virtual organization, the risk of losing his or her job becomes imminent.

As a result, leaders of both government and industry face the possibility of their organizations losing power/political positioning within the overall agency or corporation. Navigating political waters is challenging; and in the case of implementing a virtual organization, the risks are extraordinarily high considering that more than half of these organizations fail. Therefore, it is incumbent on leaders of virtual organizations to prepare for and lead in a manner that will derive the highest levels of operational performance.
**Economic Environment.** As described earlier, the current economic global environment is at a critical stage. Companies around the world are taking action to maintain an economic foothold by protecting their brands and through leadership that espouses empowerment that leads to innovation (Friedman, 2005). For example, the Tata Corporation, an India based corporation that maintains a presence around the globe with 350,000 employees, anchors its mission on trust, responsibility, integrity, and community (Witzel, 2010). In fact, Tata has codified, through its mission and values statements, its conduct with customers and employees (Witzel, 2010). Tata’s brand and culture are inextricably woven and its success is a tribute to its well-defined employee oriented mission and values (Witzel, 2010). As a result, Tata has continued to enjoy economic success (Riley, 2012).

Other companies face the same economic challenges as Tata, and can find success in the tangled economic environment as well by increasing productivity while decreasing costs. Implementing virtual organizations and teams can drive an increase in productivity as much as 40% (Yu, 2008); and costs can be reduced significantly by as much as $10K per year, per virtual employee (Shahan, 2010).

**Legal Environment.** The legal environment impacts virtual organizations in several ways. The first of these speaks to policy concerning working from home. Not unlike the Federal Government, there is the equivalent an “iron triangle” (Peters, 2010) in industry. Whereas in government there are administrative agencies, Congress, and special interests groups operating at the nodes of the triangle and driving change in the direction of virtual work; in corporate America, there are members of senior leadership, the Boards of Directors, and HR/change management organizations that are promoting the virtual workspace as well. Each of these nodes of the corporate triangle discusses, debates, and evaluates proposed changes to corporate
policy. In the case of establishing policy for the virtual workforce the process entails evaluation, consideration, debate, and consensus from the three nodes of the corporate “iron triangle”.

The second element of the legal environment is concerned with the Federal Occupational Safety and Health Administration (OSHA). While OSHA does not regulate home office spaces, companies are nonetheless required to report accidents whether they occur in the corporate office space or in the home office space (Occupational Safety and Health Administration, 2000). When accidents occur while an employee is working at home, the incident must be documented. This creates risk for the organization as future litigation may result if the organization has been negligent in the installation / placement of computer equipment in the homes of employees.

The third legal factor goes to workers’ compensation. In general, workers’ compensation is payable to employees who work from home. However, the rules and guidelines vary from state to state (National Federation of Independent Business, n.d.). Legal specialists within each company will need to be conversant with the state-to-state nuances concerning workers’ compensation. It is essential they understand the privacy provisions for virtual employees, encourage safety, and stress the importance of ergonomic furnishings for employees while they work from home.

The fourth legal issue is concerned with lease renegotiation or termination for existing brick and mortar office buildings. Corporates need to negotiate alterations to space requirements, downsize and reconfigure as needed, and pay / negotiate associated lease modification or termination fees.

**Intercultural Environment.** When corporations have worldwide locations, the intercultural environment requires consideration and analysis for any major corporate transition from formal office to virtual venues. As it relates to converting an in-office worker to a virtual
employee, there are differing levels of acceptance in each country. The international level of acceptance of telework is driven to some extent by the economic wealth of the country. For example, housing conditions in Central American countries may not offer a room or square footage for staging an at-home work environment (Manpower, n.d.). Additionally, obtaining in-home Internet service and acceptable bandwidth may hinder implementation of virtual offices in other countries. Hence, prior to launching telework in a given country, it is important that companies consider whether working virtually is logistically viable for the workforce in that country. For companies that have kept interface with international teams to a minimum, organizations would do well to consider using the Intercultural Development Inventory (IDI) to assess how well the workforce is positioned to team across cultures, and identify cross cultural training classes that can foster international collaboration.

In addition to the cultural influences that exist on an international level, there are also cultural considerations that exist within each organization located in the same country. These considerations speak to the degree to which employees share perceptions and support of the corporate mission. That is to say, in advance of adopting a telework initiative, do all of the employees share the same values concerning work ethics, and organizational objectives? Ensuring an alignment within the corporate culture can be core to a successful transition to a virtual organization.

**Technical Environment.** As discussed in the social environment section above, there can be challenges with respect to the technical environment as platforms can become dated and possibly not scalable to newer approaches to processing information. Making the leap into the virtual workforce requires that organizations upgrade technology in terms of hardware, software, groupware, and video. Transitions to leading edge technologies will serve to improve
productivity through enhanced system response time, improved organization of data, and leading-edge collaborative methods of sharing information and developing innovative solutions for clients.

All told, the leadership characteristics and behaviors that most influence the successful virtual are included in Table 1 below.

Table 1
Profile for Leaders More or Less Suited to Virtual Leadership (Adapted from Gladys, 2014)

<table>
<thead>
<tr>
<th>More Suited Virtual Leader</th>
<th>Less Suited Virtual Leader</th>
</tr>
</thead>
<tbody>
<tr>
<td>Is proficient in sharing the organizational vision and providing contextual leadership</td>
<td>Has somewhat of a negative attitude</td>
</tr>
<tr>
<td>Is trusting</td>
<td>Is demanding</td>
</tr>
<tr>
<td>Is attuned to verbal and written cues</td>
<td>Needs to have total control of his/her organization</td>
</tr>
<tr>
<td>Is comfortable delegating projects</td>
<td>Is a poor planner and is prone to issue last minute assignments</td>
</tr>
<tr>
<td>Has well-developed social skills that are equally effective in person, via voice, and in electronic interface</td>
<td>Requires status input at a level of seemingly infinite detail</td>
</tr>
<tr>
<td>Is comfortable working outside of a command and control environment</td>
<td>Views employees as generators of output rather than human resources</td>
</tr>
<tr>
<td>Solicits opinions - Uses multiple forms of media to communicate</td>
<td>Is reluctant to request support and resources from upper management</td>
</tr>
<tr>
<td>Is tactful</td>
<td>Is loathe to provide quality assignments to employees who work off-site</td>
</tr>
<tr>
<td>Is outward focused versus inward focused</td>
<td>Is rude or disrespectful to employees, denigrates others</td>
</tr>
<tr>
<td>Is self-aware</td>
<td>Lacks strong communication skills – tends to interrupt</td>
</tr>
<tr>
<td>Is responsive</td>
<td>Tends to hoard information – believing information is power</td>
</tr>
<tr>
<td>Maintains control of emotions</td>
<td>Does not believe employees will work and honestly report hours if they are out of the office</td>
</tr>
<tr>
<td>Adapts well to change</td>
<td>Is not an engaged leader</td>
</tr>
<tr>
<td>Consistently recognizes and rewards workers, offers regular feedback, appraisals, and authors and executes employee development plans</td>
<td>Cannot, or does not, clearly articulate expectations of employees</td>
</tr>
<tr>
<td>Maintains a social connection with employees that demonstrates interest and concern</td>
<td></td>
</tr>
<tr>
<td>Positions employees for advancement</td>
<td></td>
</tr>
<tr>
<td>Shares information in a transparent manner</td>
<td></td>
</tr>
<tr>
<td>Makes assignments that are skill and experience appropriate</td>
<td></td>
</tr>
<tr>
<td>Is clear with project assignments in terms of objectives, deliverables, and milestone dates</td>
<td></td>
</tr>
<tr>
<td>Facilitates collaboration and synergy</td>
<td></td>
</tr>
<tr>
<td>Is open and honest</td>
<td></td>
</tr>
</tbody>
</table>
Conclusion

There is compelling quantitative and qualitative evidence that we are now, undeniably, in the era of the global entrepreneur; an entrepreneur who will likely work virtually, with virtual employees and business partners. The growth in international trade outpaces overall global production. Every year, more PTAs are signed, breaking down trade barriers and increasing the number of preferred international trade partners. While the number of PTAs has quadrupled in the past 20 years, trade from these agreements accounts for only 16% of all international commerce. The window of opportunity for continued growth in international trade is wide open. One day soon, the lion’s share of any global entrepreneur’s revenue will come from international customers. The global marketplace presently provides the greatest growth opportunities and once these opportunities are actualized, international trade will be the majority of commerce. From these opportunities will come organizations that are far-flung, working across distances, time zones, and cultures. Those organizations that are equipped with leaders who are educated in the nuances of leading virtually will be best positioned to architect and manage successful virtual organizations.

As government decisions such as the Affordable Care Act in the United States and austerity measures in the Eurozone continue to cause businesses to reduce employment rolls and outsource duties that are critical to their success, the world’s workers will be forced to become entrepreneurs and/or virtual workers. They will either be individual consultants or build businesses that employ a small number of people in the virtual workspace to capitalize on the opportunities that global outsourcing will bring.

In The Art of War, military general, strategist and philosopher Sun Tzu writes “every battle is won before it’s ever fought.” As in war, preparation, knowledge and a keen sense of
discernment are vital to the success of any business. No entrepreneur, global or domestic, goes into a venture desiring to lose. Each one intends to win. With the ever growing and complex global market, the need for virtual workplace competency is vital to a venture’s success, requiring an entrepreneur not only be an expert in their particular industry, but also positioned as an expert in virtual workplace competency as well. By following and implementing the six steps to effective virtual leadership, the global entrepreneur is better prepared for success.

So, what does it take to successfully lead a virtual organization? According to Gladys (2014), it takes the following:

- It takes leadership actions that reflect a deep and genuine interest in the virtual employees, as well as an effective level of communication across all types of media.
- It requires trust and the willingness to empower all members of the team and provide them with meaningful work assignments.
- It takes recognition and rewards, and a plan to take employees to greater heights through training and promotions.
- It takes virtual leaders with a flexible leadership style, well-honed human, conceptual, and technical skills, and a sense of contextual intelligence to successfully lead a virtual organization.

The message here is that without increased leadership over and above that in traditional brick and mortar offices on the part of those who manage virtual employees, the likelihood of success diminishes. “Simply put: virtual leaders need to be trained to lead virtual organizations, they need to lead more rather than less, and they need to employ behaviors that ignite a spirit of commitment, and performance on the part of virtual employees” (Gladys, 2014, p. 135). In the most succinct words, "Leadership makes telework work" (Offstein & Morwick, 2009, p. xvii).
References


Proceedings Submission for Presentation at the Conference

1. Title of the submission.
   Evidence Based Accountability (EBA)

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6. Abstract

Achievement scores drive much of the effort in today's accountability system, however, there is much more that occurs in every school, every day. Evidence Based Accountability can be used from micro to macro giving School Boards and Administration a process for monitoring the results of the entire school operation effectively and efficiently. All aspects of the school community can and should be incorporated including district, state and federal requirements. This is an all-inclusive process. After leading the community in setting the vision and mission, the School Board can use one process to capture the entire efforts of the school community providing a comprehensive view of the "State of the District". Maximize your time and efforts by using a systematic approach to review (1) teaching and learning, (2) safety, (3) allocation of resources and (4) communication; thereby, spending your time on monitoring and improving, not regulating!

The concept of Evidence Based Accountability is neither new nor revolutionary. In part, it has been used extensively in many districts. However, bringing the whole school monitoring concept together is unique and provides one tool that can be used by Principals, Superintendents and School Boards. Since everyone uses the same information, it can provide for self-monitoring which is very powerful. This process was successfully used in three school districts to not only improve achievement but also to provide for evaluations of programs and personnel. The least amount of improvement was 37% in Reading and Math over three years. The cost is minimal with a goal of institutionalizing the practice so that a seamless transition between the numerous processes in place can be discarded. No other resources, other than the time, are necessary to implement the holistic approach of Evidence Based Accountability.

After the session, attendees should feel comfortable in understanding and using Evidence Based Accountability. With the materials provided, the district could begin implementation immediately. Evidence Based Accountability is not a program; rather it is a process you conduct. It is therefore effective free. There are no ongoing expenses.
Teacher Mentoring for Effective Teacher Training and Development: The Case of a Developing Country, Kenya

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Abstract

The subject of teacher mentoring has attracted worldwide attention in recent times. This paper presents an account of a pre-service teacher mentoring project undertaken in Kenya through a partnership of Kenyatta University, Kenya and Syracuse University, USA in 2013. The main purpose of study was to understand effectiveness of the collaborative mentoring model on pre-service teacher training. The implementation of the project employed an evaluative survey design involving the training of teacher mentors, mentoring of selected pre-service teachers and evaluating the mentoring process. Findings from the study indicated that the collaborative mentoring has the capacity to enhance teacher development at the pre-service level. However, there is no policy at the university or national level to guide the implementation of mentoring in teacher education. The paper underscores the need for mentoring in the training of pre-service teachers and recommends the need to establish an official policy on teacher mentoring in pre-service teacher education at university and national level. Such a policy could address aspects such as the roles of each participant in the mentoring process. It is envisaged that the proposed teacher mentoring process can be applicable to many developing countries.

Introduction

Teachers are central to national development. They are an important resource in the teaching/learning process and their training and utilization therefore requires critical consideration. The government programmes for teacher education aim at providing qualified
teachers and are, therefore, central to ensuring the provision of quality education. The objectives of teacher education programmes aim at developing communication skills, professional attitudes and values that equip teachers with the knowledge and ability to identify and develop the educational needs of the child (Task Force on Education, 2012). The teaching process demands designing and implementation of deliberate plans to achieve intended objectives. To do so one has to consciously and carefully select appropriate content, resources and instructional strategies that seek to attain the desired outcomes. Such a task can be daunting especially to the novice teachers graduating from colleges and universities and those on training practicum. There is therefore a need to put into place a mechanism for guiding trainees and also inducting novice teachers into the teaching profession. Thus, by definition, such a programme would have to be a mentoring one in which the novice is assisted to settle into the teaching career with relative ease.

The majority of secondary school teachers are trained at public universities and diploma colleges and are required to specialize in two teaching subjects upon graduation. Currently, the class sizes in universities are too large for lecturers to pay special attention to specific methodology and therefore the quality of the teacher is often compromised. In order to improve the quality of the teachers graduating out of our universities, it is imperative that the secondary school teacher training programme is restructured to enable the trainees acquire sufficient subject mastery and pedagogy.

Mentoring is the establishment of a personal relationship for the purpose of professional instruction and guidance. In education, mentoring programmes are implemented for pre-service teacher induction and continuing teacher development. Mentoring provides mentors with the opportunity to impart their knowledge and experience and reflect on their own journey.

**Statement of the Problem**

In Kenya, as in other countries throughout the world, there are regular pre-service teacher training programmes that comprise theory and practical components. This practice is faithfully
implemented continually without due regard to how the graduates leaving universities and other tertiary educational institutions each year transition to begin their professional career. For a novice secondary school teacher, this transition can be mired by challenges such as the interpretation of the curriculum, selection and/or designing of instructional resources, planning for teaching, appropriate implementation of teaching plans and evaluation of teaching effectiveness. Such novice teachers need structured guidance to enable them gain deeper understanding of the functioning of the school and the teaching process. It is our considered view that pre-service teachers should receive induction into the profession during their Teaching Practice (TP) otherwise referred to as Practicum. Such induction can take the form on teacher mentoring which is a necessary process for all teachers preparing to enter into the teaching profession in order to ensure that their practice is firmly anchored on professional ethics and practice. Since there is no officially functional system of inducting pre-service teachers in Kenya, there is need for establishing a firm, official mechanism of anchoring such teachers on sound functional professional base so as to, in turn, ensure acceptable learner development in the institutions that these graduating teachers will be posted to. This is the basic reason for developing a professional pre-service teacher mentoring programme for Kenya. Many teacher training institutions in developing countries are beginning to explore other effective ways of teacher professional development. Teacher mentoring programmes, the world over, are increasingly getting perceived as an effective form of development for beginning or training teachers. The significance of mentoring for beginning teachers has been gaining wide recognition in developed countries (Pungur, 2007) but is still at a slow formative stage in developing countries. But as attention continues to be focused on teachers as a key factor in educational reform, and on their need for on-going improvement and support, teacher mentoring becomes a viable option in education policy.

Objectives of the Research Project
This paper examines how secondary school pre-service teacher training can be enhanced through a structured mentorship programme. It attempts to respond to the following questions as regards the role of veteran teachers in the provision of quality teacher preparation: *What are the different ways in which pre-service teachers are inducted into the teaching profession? What role can the practicing teacher play in inducting the new teacher into the profession?* (These questions highlight teachers’ expected roles and missions within the education system). *What is the effect of mentoring on student teachers?* By analysing 3rd and final year student teachers’ induction into the teaching profession through a mentoring programme, we aimed to understand the effect of mentoring on teacher training.

**Teacher Mentoring**

In Education a mentor is an experienced and a trained teacher who guides a teacher on practicum or a novice on professional matters. It is, therefore, important that a mentor is a teacher with experience and should have gone through some relevant training. Teacher mentoring can be a valuable process in educational reform for beginning teachers. Besides helping others to develop and improve their personal and professional potential, mentoring is a meaningful and useful leadership skill. This is so because to mentor is “to support and encourage people to manage their own learning in order that they may maximize their potential, develop their skills, improve their performance and become the person they want to be” (Parsloe, 2000).

In addition to managing and motivating people, it is also important in helping young incoming teachers learn, grow and become more effective in their job. Such a responsibility requires proper training to facilitate reasonable and meaningful delivery of the said service. By establishing teacher mentoring programmes, pre-service teachers could be guided effectively to develop their instructional skills during practicum or teaching practice and novice teachers are given a strong start at the beginning of their careers.
Research identifies various mentoring models and different institutions in different parts of the world have various modes of organizing teaching practicum. These variations have been occasioned by a number of factors such as the economy, research knowledge or preference (Bozeman & Feeney, 2007; Twoli, 2011). These factors have been used by different institutions to come up with models of teaching practice. Two progressive models have been used in the pre-service teaching practice. These are (1) the Corporate Model which is regarded as the traditional model and (2) the more improved Collaborative Model which uses experienced teachers as mentors (Twoli, 2011).

**The Corporate Model.** The corporate model can be regarded as the basic and traditional model that has been used in many parts of the world. This model is still persistent in developing countries for various reasons. It is economical in its operation and can be managed and sometimes abused by generalists. This model allows students to apply for schools of their choice and posted as per their requests by a university or college coordinator. Placement of the pre-service teachers is controlled by the needs of the schools. They select the teachers with the subjects where there is a shortage (Fig 1).

<table>
<thead>
<tr>
<th>Pre-service Teacher</th>
<th>Pre-service Teacher</th>
<th>Pre-service Teacher</th>
</tr>
</thead>
<tbody>
<tr>
<td>Posted to a school for TP (one-term)</td>
<td>Student applies to school</td>
<td>Supervision by university lecturers</td>
</tr>
<tr>
<td>Content courses</td>
<td>Accepted if needed</td>
<td>Little attention from school</td>
</tr>
<tr>
<td>Professional courses</td>
<td>No link to a teacher</td>
<td></td>
</tr>
<tr>
<td>Two or so subjects</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pedagogy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Psychology</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Figure 1. The Corporate Mentoring Model*

There are times, indeed when a pre-service teacher is placed in a school where there is no other teacher in the subject area, a situation which makes the pre-service teacher “the head of the
department” since he or she will be the only one in the department. There is almost no interaction with the teachers and administration. Even where there is a co-operating teacher who is supposed to guide the pre-service teacher, experience has shown that in some schools, the co-operating teacher simply takes leave and abandons the practicing teacher to go it alone. How is such a teacher going to be guided? When it comes to assessment, the pre-service teachers are assessed directly by lecturers or tutors from university or college. These assessors arrive and go straight to the classroom to assess the student teacher. From the classroom, they go away hurriedly, giving very little regard to the school environment.

**The Collaborative Professional Model.** The Collaborative Mentoring School (CMS) model is rooted in the principles of reflective practice where the student teacher is asked to critically examine their actions and the context of those actions. In order to reflect on their responsibilities and performance, student teachers are required to keep a professional reflective journal. Issues from the journal are discussed with the mentor teacher and the university supervisor. This model is similar to the Inquiry Based Model (Nguyen, 2009) typically used in the United States in which the mentoring process is structured with a triad of participants including the student teacher, the mentor teacher and the university supervisor. “The triad of cooperating teachers, student teachers, and a college supervisor engaged in on-going and purposeful discourse to explore the teacher–learner (expert–novice) reciprocity, school culture and social relations” (p 655). In both the CMS and the inquiry based models, the roles of each member of the triad are carefully outlined.

The central player in this model is the mentor teacher. A mentor teacher would be an experienced teacher in the school who provides front line advice, support and feedback to the student-teacher. Mentors in general use their experience to assist student teachers in developing classroom management skills, gaining familiarity with methodology, use of resources, lesson planning, assessment and reflective practice. It can be summarized that mentors generally
provide guidance and model professional behaviour through the development of supportive relationships and are also play an evaluator role.

**Figure 2. The Collaborative Professional Model**

The critical stage in this model is the placement time. Prior planning and even agreement is needed before the posting stage. The training institution needs to have some standing agreement with the school and even at times with the mentors. The training institution will be required to play diplomacy or use some policy to work with schools. At times it may come down to working only with those schools which “match with your policy and have willing experienced teachers to act as mentors”.

One assumption which is often made in the mentoring initiative is that all experienced teachers are competent as mentors. This assumption cannot be taken for granted because effective mentors should have certain qualities as identified by Tilley. (2002): P 17.

*Mentors need to be committed to the educational exercise and to take an interest in the personal and professional development of the mentee. Mentors need to be flexible enough to tolerate and appreciate the uniqueness and individuality of the mentees.*

For an effective mentoring relationship to develop it is crucial that the mentor has good interpersonal skills and the ability to listen very attentively, deal with differences of opinion in a

<table>
<thead>
<tr>
<th>Pre-service teacher</th>
<th>Pre-service teacher</th>
<th>Pre-service teacher</th>
</tr>
</thead>
<tbody>
<tr>
<td>Placed in school with identified mentor.</td>
<td>Student placed in school</td>
<td>Guided by mentor most of the time</td>
</tr>
<tr>
<td>Content courses</td>
<td>Linked to a mentor</td>
<td>Supervised occasionally by lecturer</td>
</tr>
<tr>
<td>Professional courses</td>
<td></td>
<td>Mentor, lecturer hold conferences.</td>
</tr>
<tr>
<td>Two or so subjects</td>
<td></td>
<td>Mentor and lecturer jointly arrive at the final grade.</td>
</tr>
<tr>
<td>Pedagogy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Psychology</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
non-judgemental manner, ask open-ended questions rather than closed ones, focus on the proteges’ agenda, show flexibility and be creative, and use all the above interpersonal skills for the benefit of the practising teacher.

The co-operating teacher is the one who assigns lessons to the practising teacher, and introduces the practising teacher to the class and to the school requirements and regulations. In addition to all these, the co-operating teacher has the role to act as a link between the practising teacher and the mentor. This is the person who is vast in the content and hence is suited to guide or assist the new teacher. Where possible, and particularly at the start of the exercise, the co-operating teacher has the option to sit in class to ensure that the teacher is ‘doing things right’.

The training institution has its representation and role in this model. There is the university coordinator who has the main roles of placement (posting) of pre-service teachers or students in suitable schools. This is often a very delicate task as there has to be a mentor-student teacher link. This can be quite a headache especially if the population requiring placement is large. The university co-ordinator has also another role that is of overall administration; he has to ensure that the mentor process is working well and the right university assessors (supervisors) are in the field to observe and bring feedback for records.

**Mentor**
- Guides teacher in class and school

**University co-ordinator**
- Placement
- administration

**Pre-service Teacher**
- On practicum or TP

**University –supervisor**
- Observes lessons
- Conferences with mentors and mentees.
- Moderates grades.

**Co-operating Teacher**
- Checks on content & Delivery
- Checks on assessment
Figure 3: School-University partnership in collaborative model

The last person with an important role in the model is the university supervisor. This should be a person established in teacher development. Such a person will observe the student-teacher in class. After observing lessons, he/she would arrange for conferencing with the mentor and the teacher for purposes of giving advice. Usually, this would end in an evaluation process when the supervisor and mentor jointly come up with an agreed grade. In most cases, certain characteristics define a strong student-teacher link and that is why a university supervisor would not just engage in subject-specific support but also content. In sum, the university supervisor’s main task is to open and maintain communication between the parties (Willems, 1986).

Theoretical Framework

Teacher mentoring is grounded in the reflection theory. The interaction between the mentor and the protégé is based on activities that identified in the reflection theory. Dewey (1933) regarded reflection as problem-solving or thinking about solving a problem, which involves action chaining. Thus, according to him, reflection is an active and deliberative cognitive process which involves reflective thinking and reflective action. Schön (1983, 1987) presents two forms of reflection, that is, reflection-in-action, which he describes as reflection that happens while action (e.g. teaching) is still occurring; and reflection-on-action, which he describes as reflection that occurs after the event. Clearly, Schön’s definition of reflection is intrinsically related to action. According to him, through reflection and action, professionals are bound to make rational judgements about how to modify their actions and find new ways of
doing them while in action (reflection-in-action) or after the action has occurred (reflection-on-action).

With regard to teacher education, Zeichner (2009) and Hall (1985) claim that emphasizing reflection too soon in their preparation turns novice teachers off and become difficult to sustain. The assumption is that the neophytes tend to perceive it as a worthless distraction that takes their attention away from mastering the content and teaching skills they are particularly anxious about. However, when reflection is imbedded in the mentoring process, such fears are reduced since the mentor is available to offer direction on the challenges posed by the reflection process. The reflection should be an integral component that is incorporated in all the teaching skills and not be seen as a separate entity, regardless of the students’ level of study as this would enhance their holistic growth and development. In the context of teacher mentoring the reflection process occurs in a sequential set of steps (figure 4). The process is done collaboratively between the mentor teacher and the mentee.

**Figure 4. The Reflection Process**

**Methodology**
As part of a partnership project between Kenyatta University and Syracuse University, U.S.A. we undertook to understand the effectiveness of the collaborative mentoring model on pre-service teacher training in a developing country like Kenya. The implementation of the project employed an evaluative survey design involving the training of teacher mentors, mentoring of selected pre-service teachers and evaluation of the mentoring process. The study focused on the following research questions: What are the different ways in which pre-service teachers are inducted into the teaching profession? What role can the practicing teacher play in inducting the new teacher into the profession? What is the effect of mentoring on student teachers? By analysing 3rd and final year student teachers’ induction into the teaching profession through a mentoring programme, we sought to understand the effect of mentoring on teacher training.

We collected data through questionnaires and classroom observations and interviews. The main instruments used included (1) Classroom Observation Feedback Form which was used mainly by the mentor teachers to observe a TP-student teaching in class. This was followed by a conference between the student teacher and mentor teacher. (2) Mentor Teacher Record Form. This required the mentor to give documented and progressive performance on key skills by TP-students. The main areas emphasized were planning, class-management, instructional skills, integration of resources, evaluation and lastly, professional growth. (3) Student –Teacher Questionnaire. This was meant for TP students being mentored and also non-mentored teachers for purposes of comparison. (4) Questionnaire for mentors which sought to find out their impressions on a number of issues. Such issues included: work load; school contribution and co-operation; mentor – teacher relationship; challenges and benefits of teacher mentoring, and (6) Interview Schedule with the School Principals which to gauge whether the principals appreciated and supported the programme.
Selecting and Training Mentors. The success of the mentoring programme depends on the proper selection and training process. According to Gray and Gray (1985), the selection should emphasize experience, commitment, and time to assist pre-service or novice teachers. Another characteristic which was been emphasized during the selection process for effective mentors was “a willingness to nature another person” (Freedman, 1993). This means that the individuals recruited as mentors should be people-oriented, open-minded, flexible, empathetic and collaborative. One major characteristic which was emphasized in the selection of teachers in this study was ‘experience’ in the field and a period of five years and above was conceived as good enough. Nevertheless other characteristics such as commitment, people-oriented etc. were considered and were used by the school administration in recommending the teachers.

The selection process commenced with the areas or regions. The study had to limit the population to match the resources. With this in mind two regions, four schools and thirteen teachers were selected for the training as seen in Table 1 below. The composition of the teachers was rather skewed with respect to gender. This was partly occasioned by the attempt to match the protégés (TP students) with the mentors. The condition made the gender ratio of male: female to be 4:9.

Table 1. Distribution of teacher mentors in schools

<table>
<thead>
<tr>
<th>Regions</th>
<th>Schools</th>
<th>Teachers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Region A</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>1 – Girls’ school</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>1 – Boys’ “</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1 – Mixed “</td>
<td>3</td>
</tr>
<tr>
<td>Region B</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Girls’ school</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>4</td>
<td>13</td>
</tr>
</tbody>
</table>

The training of mentors was organized and managed by five faculty of the Department of Educational communication and Technology. They brainstormed first before this was followed by preparation of the notes and the programme structure.
The teachers were invited to the department for a one day workshop. The training emphasized the concept of mentoring, relationship skills, effective teaching, models of supervision and coaching, conflict resolution and lesson evaluation. After the workshop, the mentors implemented the mentorship programme in their schools and were monitored and evaluated for one school term, which is usually twelve effective weeks. The main purpose of training teacher mentors was to aid them to have the key knowledge and skills that would be useful in identifying and responding to teaching practice teachers needs that create an atmosphere that is collegial in engaging mentors and practising teachers.
Figure 5. The Research Stages

Matching Mentors and TP Students. One of the design aspects that needed attention in the teacher mentor programme was the mentor TP-student pairing up. The main consideration in pairing up was the subject combination. Mentors were paired up 1:1 with practising students who have same subject combinations. This pairing criterion was preferred mainly because it aided mentors to effectively take charge of both the pedagogical and content domains in coaching.

Table 2. Teachers, gender and subject distribution

<table>
<thead>
<tr>
<th>Schools</th>
<th>Teachers</th>
<th>Gender</th>
<th>Subjects</th>
</tr>
</thead>
<tbody>
<tr>
<td>A Girls’ HS</td>
<td>1</td>
<td>Teacher A</td>
<td>F</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>Teacher B</td>
<td>F</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>Teacher C</td>
<td>F</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>Teacher D</td>
<td>F</td>
</tr>
<tr>
<td>A Mixed H.S</td>
<td>5</td>
<td>Teacher E</td>
<td>F</td>
</tr>
<tr>
<td></td>
<td>6</td>
<td>Teacher F</td>
<td>F</td>
</tr>
<tr>
<td></td>
<td>7</td>
<td>Teacher G</td>
<td>M</td>
</tr>
<tr>
<td>A Boys’ H.S</td>
<td>8</td>
<td>Teacher H</td>
<td>M</td>
</tr>
<tr>
<td></td>
<td>9</td>
<td>Teacher I</td>
<td>F</td>
</tr>
<tr>
<td></td>
<td>10</td>
<td>Teacher J</td>
<td>F</td>
</tr>
<tr>
<td>A Girls’ School</td>
<td>11</td>
<td>Teacher K</td>
<td>F</td>
</tr>
<tr>
<td></td>
<td>12</td>
<td>Teacher L</td>
<td>M</td>
</tr>
<tr>
<td></td>
<td>13</td>
<td>Teacher M</td>
<td>M</td>
</tr>
</tbody>
</table>

Data Analysis

The main focus of the study was on mentors in the four schools. There were thirteen mentors who trained but later one could not practice mentoring because the TP student got a
transfer at the last minute. This explains why the data in this report will be reflecting a total of twelve teachers comprising three males and nine females.

The data analysis emphasized descriptive statistics mainly because of the small size of the information resulting from a small sample. As mentioned earlier, a number of instruments were used to gather the information. These included; Classroom observation form, Mentor record form, Student-teacher questionnaire, Questionnaire for mentors, and an interview schedule with school principals. The data analysis was facilitated by the SPSS programme.

**Findings and Discussion**

**Benefits of the Mentoring Process to Mentees.** The main purpose of the mentor programmes is to help beginning teachers make a successful transition into teaching by relying on the expertise of the experienced teachers to provide a clinical, real-word training process. The study was interested in identifying the main benefits of mentoring to TP students. A questionnaire and an interview were used to acquire this information. What were the main benefits? The most common benefit which came out strongly was “the immediate and relevant feedback”. This was valued greatly by TP students. As one student teacher put it:

*It was so settling to have somebody to consult any time in case of a problem. It is not like when you only rely on university supervisors who come after a long time…………
 meanwhile you may continue making same mistakes.*

We see that relevant and immediate feedback is fundamental to the process. It was relevant because the mentors were in the same subject area and immediate because mentors were available for mentees all the time since they were in the same school. Other benefits reported included the following: (1) The process of teacher mentoring was appreciated by the TP students because it gave them a fast start. They were able to settle a lot faster regarding writing schemes of work, lesson plans, and general orientation to school rules and places.(2) The help and the fast settlement were like a form of acceptance to the school. Consequently it helped them to build
confidence in and the motivation towards the profession. This is useful to young and beginning teachers as they are likely to love the profession and stay for a long time. In the long run, the retention rate of teachers can remain high. (3) The protégés were with the mentors for an extended length of time. This gave the practicing teachers ample time to get elaborate and valid guidance. Examples which were given to reinforce this point related to tasks like setting and marking Continuous Assessment Tests CATS; developing instructional resources and participating in co-curricular activities.

**Comparing the Performance of Protégés and Non-Protégés.** The idea of comparing some aspects of instruction among mentees and non-mentees was of interest to the study. This was done towards the end of the mentoring exercise which was at the end of the school term. A questionnaire was used for this purpose. It was administered to all the mentees and the same number of non-mentees in the schools within the same environment. A major aspect in the questionnaire sought to know within how many weeks protégés and non-protégés were able to grasp the structure and interpretation of some instructional instruments or procedures. The results are displayed in table 3. The distribution shows that the mentees got going early. If we take the case of writing a scheme of work, it is observed that six mentees mastered the structure of a scheme of working a week as compared to only four non-mentees. This applies to all other items in the table. This does confirm the general statement which was emphasized by mentees in reference to the major merits of mentoring programme that it gives mentees a fast start.

*Table 3. Time taken to grasp the structure and perform some tasks*

<table>
<thead>
<tr>
<th>Task</th>
<th>One week</th>
<th>Two weeks</th>
<th>Four weeks</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>N</td>
<td>M</td>
</tr>
<tr>
<td>To write scheme of work</td>
<td>6</td>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td>To write a lesson plan</td>
<td>9</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>To deliver content confidently</td>
<td>8</td>
<td>3</td>
<td>3</td>
</tr>
</tbody>
</table>
To maintain discipline in class | 5 | 2 | 5 | 6 | 2 | 5  
To respond to questions from learners | 8 | 5 | 2 | 6 | 2 | 2

M = Mentees  NM = Non-mentees

The other measure of comparison between mentees and non-mentees was the rate of feedback they gave to their learners. They were asked to indicate (4) for more often, (3) sometimes, (2) rarely (1) never. The following results were obtained.

Table 4. Rates on modes of feedback

<table>
<thead>
<tr>
<th>Mode of Feedback</th>
<th>Mentees</th>
<th>Non-mentees</th>
</tr>
</thead>
<tbody>
<tr>
<td>Questioning</td>
<td>3.88</td>
<td>3.10</td>
</tr>
<tr>
<td>CATS</td>
<td>2.40</td>
<td>2.12</td>
</tr>
<tr>
<td>Assignments</td>
<td>2.50</td>
<td>1.25</td>
</tr>
<tr>
<td>Practical/Projects</td>
<td>3.12</td>
<td>2.20</td>
</tr>
</tbody>
</table>

The frequency of the mentees is higher than that of non-mentees, which is an indication that mentees sought or used feedback more frequently, and this could be attributed to the mentoring effects.

Benefits of Mentoring Process to Mentors. Using a questionnaire and an interview, mentors were probed on the benefits of the process. The following main points were given; (1) Mentors were very delighted with the realization of satisfaction to develop as a professional. They could observe a TP-student come up from scratch to a constructive teacher. They felt that this improvement is as a result of their effort & guidance. (2) The other benefit that mentors sounded was the opportunity to be more reflective. As they advised the beginning teachers, they too, had to make sure that were confident in what they were advising. For example, they had to be sure of the content, lesson planning and suitable methodologies. This gave the opportunity to mentors to refresh on all these areas. These refreshed and professional knowledge and skills would then be incorporated in the mentors’ lessons, thus improving their performance as well and adds to professional growth for mentors. (3) The mentors had the opportunity to interact with the university staff, an opportunity which lays ground for academic and professional
consultations. Such an opportunity can be used to consult, for example on further education and even references for jobs or promotions.

**Challenges Faced by Mentors.** Nearly all teacher mentors reported a successful session with the TP-students. They however addressed some areas which can loosely be referred to as challenges. One challenge was to do with planning for instruction. One requirement every mentor was to fulfil was to guide the mentees on planning. One of the tasks in the planning stage was to ensure that TP students write lesson plans and schemes of work. This proved a challenge to some mentors for two main reasons. First, some mentors have not been in the habit and rhythm of frequent planning and were apparently not sure of the planning process e.g. writing a lesson plan. They had to ‘refresh’ on lesson planning and for some, this took a while. Second, was the fact that while the TP-students were familiar with the Kenyatta University format of lesson planning, some mentors had trained from other universities which used different formats. This meant, learning the Kenyatta university format first before guiding TP-students.

The other challenge that mentors faced was to do with the lack of synchronization of the mentor free time-table time and TP-student teaching time. It often happened that when the mentor was teaching, the student teacher was also teaching. The overlap of teaching time for both mentor and the mentee denied them adequate classroom interaction (observation) which is a key task in the mentoring process.

The official supervisors of the TP-students were the university staffs, who are often referred to as clinical supervisors. There are times when there were conflicts in advice between the one given by the mentor and that by the clinical supervisor. This does throw the TP-student in confusion. While the practising student teacher might be aware that the mentor is the more effective because he/she is in the subject area, the practicing teacher is also well aware that the clinical supervisor awards the final grade. The design of the study did not officially recognize the mentor’s grade. The mentors and the mentees were basically at the same level in terms of
academic level. This made some mentors to feel that they did not have greater authority over the mentees. In response to this situation, some mentors proposed a form of course that would elevate mentors to a higher level, preferably a master’s course in mentoring and instruction.

**Teacher Mentoring and Workload.** Mentors were asked to indicate how many TP students they were comfortably able to mentor. This question was put to them after going through the mentoring experience at the end of the school term. The response was almost by unanimous, as most of them indicated that were comfortably able to guide two TP students. They qualified by emphasizing that this was only possible if TP-students are in the same school. A number of mentors had justification for this number of two on the grounds that the mentors were involved in managing their lessons in the two subjects and they needed adequate time to guide mentees in such activities as classroom observations and conferencing. The mentors were further asked to indicate how many times they were able to observe mentees teaching in a classroom or a laboratory. The results in table 5 show a good effort by the mentors. On the average, they were able to observe a TP student five times. Through interview, we were able to gather that the variation in observation was due to the teaching load and also on the overlap of the lessons on the school time-table. The average classroom observation by most teacher training institutions is four.

*Table 5. Number of classroom observations by mentors*

<table>
<thead>
<tr>
<th>No of mentors</th>
<th>Frequencies</th>
<th>Totals</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>4</td>
<td>12</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>5</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>6</td>
<td>18</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>8</td>
<td>16</td>
<td></td>
</tr>
<tr>
<td><strong>Total 12</strong></td>
<td><strong>66</strong></td>
<td></td>
<td><strong>66</strong></td>
</tr>
</tbody>
</table>

If mentors can manage the indicated observations, then all that the university can do is just to “fill in” with one or two clinical observations to complete the TP exercise. This of course does assume that the mentors still do a good job when it comes to full scale mentor programme.
A part from the observation of lessons in classrooms one of the main tasks, teacher mentors were required to guide or check on other instructional related activities. Such activities included the nature and quality of homework TP students gave to their learners;

- Checking on the scheme of work
- Checking and advising on the lesson plans
- Observing and advising on classroom management issues
- Monitoring the evaluation strategies including setting for CATs
- Teacher mentors were asked to indicate the frequencies given to these activities.

The rate or frequencies of attention in one school term was quite reasonable, with an average of just over four. Given that one school term has about ten active weeks, this comes to teacher mentors giving attention at least once every two weeks. This is not a bad rate considering that they are busy with other regular school activities.

Table 6. Some tasks performed by mentors

<table>
<thead>
<tr>
<th>Role performed</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Checking and advising on the homework</td>
<td>4</td>
</tr>
<tr>
<td>Advising on syllabus coverage</td>
<td>2</td>
</tr>
<tr>
<td>Checking on lesson plans</td>
<td>4</td>
</tr>
<tr>
<td>Advising on class management</td>
<td>5</td>
</tr>
<tr>
<td>Checking on evaluation strategies</td>
<td>7</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td><strong>22</strong></td>
</tr>
</tbody>
</table>

**Mean = 4.4**

**School Administration Support.** School administrators have a crucial role to play if the teacher mentor programme is to be successful. This role was greatly realized in the design and progression of this programme. It was realized from the beginning that seeking (a strong) link with the school administration would open way for other activities planned for the teacher mentoring. It is with this understanding that we made it a priority to contact the school administration to seek for permission to train their teachers and use the school for mentoring our
teaching practice students. The request was put personally and in a note to school principals by explaining the nature and the benefits likely to accrue from it. It was with a lot of delight that all school administrators welcomed the idea of launching the programme in the schools.

This study received overwhelming support from administration, especially when it came to providing a conducive environment. The programme was announced at the school parade and the teachers involved introduced. The school as a whole was asked to support the programme.

There were a number of issues which the school administration was not immediately ready to facilitate. For example, the school was not ready to reduce the number of lessons for mentor teachers, or to re-arrange the timetable to suit the programme or to participate in supervising the programme. Nevertheless, this did not seriously affect the programme. The provision of a supportive school climate was supreme. Some school administrators were keen to monitor the programme activities and went on to appreciate the benefits. There was this one school where our students were being mentored. There were, however, other TP-students from other institutions who were not on the programme and therefore were not being mentored. They looked left out and felt they were missing something important. This observation lead to the administration to request that, they too, should be included in the programme. Reports indicate that these TP-students from other institutions appreciated the coaching by our mentors.

The Role of the Teacher Mentor in the University Supervision Process. Both the mentors and the mentees reported the need to separate the supervision by mentors and that of the university supervisors. The supervisions were done independently and there was no given time that mentors and university supervisors observed a lesson together. This separation is important considering that the observations serve different purposes. While the mentors focused mainly on teacher development, the university supervisors emphasized the element of assessment.

Classroom observation is essential in providing information about a TP-student and mentor or
clinical supervisor. The mentor can use this information to provide quality advice while the TP student can use the information to improve in planning and presentation of lessons.

While the mentors focused mainly on teacher development, the university supervisors emphasized the element of assessment. The main goal of mentor supervision should be to bring improvement in teacher performance (Olivia & Pawlas, 1994) rather than to generate a grade for entry in the university transcript. In a way, we therefore expected the moods on behaviour of the TP-students to be different. To be more relaxed with the mentor than with the university supervisor. The use of clinical supervision techniques can radically change the supervisor-teacher relationship and may result in less stress and anxiety on the TP teacher.

The observation cycle recommended to teacher mentors has three main stages. Phases of clinical supervision used can be re-presented as shown in figure 6 and follows a three steps cycle identified as 1) Pre-observation conference during which the TP-student and mentor work out the mode of presentation based on the lesson plan, 2) Lesson observation in which the mentor sits in class and follows the lesson, noting down key points for advice and discussion. An observation schedule is used by the mentor to write notes, and 3) Post-observation conferencing, the last phase of the cycle and this is when mentor gives the feedback to the TP-student guided by the notes made during lesson observation. Essentially the feedback focuses on the positive points, weak points and ideas not well articulated in the lesson.
Both the TP-students and the mentors had been briefed that the assessment was not for direct grading but can influence the university grade through the skills gained through mentoring experiences. The mentors had free access to university supervisor's comments and grades. Reflecting on the university supervisor's comments and grades, one mentor had this to say: "The comments are brief and not guiding, especially in content and instruction". This might be due to the fact that a large number of TP students and many of the university supervisors put out for the job are not in the subject area and at times might not be in the school of education. Such supervisors are limited, though it is acknowledged that some have gained some experience through long service in TP-supervision.

Another one said:

"There is limited feedback to TP-students. University lecturers are often in a hurry as they race to cover the required number of students observations per day. As a result, they may come in the lesson late or leave early or both".

According to her, some may not have time for post-conferencing (discussion after the lesson) which is regarded as a major component of supervision.

Yet another one commented "Grading by university supervisors was on the higher side". This again could be due to the concept of "giving the benefit of the doubt." When one is not sure, compensates this by generous awards to induce the other party to satisfaction and shut out any critical comments or questions. This seemed to give the mentors the inspiration that they can in fact do a good job compared to some university supervisors.

If we were to go by the mentor impressions, it can be said that most of the mentors had high belief or confidence and expectations in their performance. This sort of satisfaction by mentors after the exercise has been associated with the firm training and experiences of mentors.
(Dilworth & Imig, 1995). This has implications that experienced teachers who go through a suitable training can quickly but steadily acquire skills in teacher development.

**Conclusion and Recommendations**

This report is based on a small scale research on teacher mentor programme. It involved only a few teachers in schools which were within easy reach, thus ensuring effective monitoring and evaluation. The main purpose of the programme was to determine its effects; especially with respect to mentor helping beginning (TP-Teachers) teachers to acquire the main skills that can make them make entry in the profession with a strong base. The results of the programme show that there are high gains for both the mentor and mentees (TP-Teachers). Mentors reported increased professional revitalization as a result of reflections and interactions with mentees. On the other hand, the beginning teachers (TP-teachers) reported immediate feedback, motivation, less isolation and belief that teaching can be a satisfying profession.

For a successful teacher mentoring programme, careful planning and design are very important. We found the subject–to-subject design very ideal. This design allowed a mentor to guide a new teacher (TP-teacher) in his or her subject area. This was with the belief that the greatest support to mentees was in the classroom.

Quality teaching is essential if the mission of education is to be fulfilled. Mentoring can play a critical role in improving the professional knowledge and skills that teachers need to instruct and prepare learners for the next generation. The outcome of this study encourages us to emphatically recommend that mentoring can be a viable policy option in education for developing countries especially in Africa. We are aware that teacher mentoring is widely used in developed countries and have posted encouraging gains in teacher development. It is high time developed countries came up with policies that support teacher mentoring programmes. Such programmes can be designed to suit the system of particular system of education and the school environments.
Recommendation #1. There is a need to establish an official policy on teacher mentoring in pre-service teacher training curriculum. Such a policy could to address aspects of such as outlining the roles of each participant in the mentoring process, as well as adequate training of teacher mentors and the role of school administrators. It is also recommended that school administrators should have knowledge of any new programmes that concerns teachers and instruction in general. Such awareness will put administrators in a position to plan how best to support the programme (Janas, 1996). A school administrator responsibility with respect to a teacher mentoring programme can be several. These include:

- Creation of a supportive school atmosphere.
- Provision of release time: TP students and their mentors can be given enough time and opportunities to work together on a regular basis and on-going basis.
- Development of an instructional design (Time-table) that includes a reduced work load.
- Participation in Programme orientation, and school co-curricular activities.
- Supervision and evaluation of the professional performance and relationship developed by mentors and teachers.

School administration should have knowledge of the teacher mentoring programme especially in its formative stage. Both the mentors and beginning teachers need a firm support of school administration right from the principal to the head of department. It is with this realization that the research team wrote to principals to explain about the programme and seek permission and support.

Mentors in particular needed the support of administrators for successful implementation of this programme. As it is often said, giving support is a social phenomenon. Teachers are likely to appreciate support especially if it came from their superiors. Such support can boost their confidence and self-worth.
It is envisaged that the proposed teacher mentoring process can be applicable to many other developing countries.

**Recommendation #2.** The collaborative mentoring model (Pungur, 2007) which assumes the format outlined in figure 2 is recommended since it has the capacity to improve teacher development at the pre-service level. Findings from the study indicated that the collaborative mentoring has the capacity to improve teacher development at the pre-service level.

**References**


Twoli N.W. (2011). Mentoring as a process of training teachers in the 21\textsuperscript{st} century. Proceeding of the 2\textsuperscript{nd} International Conference on Education. Kenyatta University, Kenya.


*This research was made possible by the generous support of the American people through the United States Agency for International Development (USAID) and the Higher Education for Development (HED) office, as well as the Schools of Education at Kenyatta University and Syracuse University. The contents are the responsibility of*
the project team members from Kenyatta University and Syracuse University and do not necessarily reflect the views of HED, USAID or the United States Government.
Abstract

This study on teaching practice experience was conducted at a Kenyan University by researchers from both the USA and Kenya through a partnership project to build capacity through quality teacher preparation. The portion of this study presented here used survey techniques and specifically addressed the student teachers’ perspectives on the preparation processes, and ability to plan, instruct and use feedback to improve instruction in teaching practice. Stratified sampling of student teachers (n=360) and supervisor (n=240) was used. The student teacher questionnaire covered several educational components such, as professionalism, lesson material preparation, content
knowledge, teaching performance skills, and reflection based on classroom observation feedback.

The major findings were student teachers inability to integrate Information Communication Technology (ICT) in teaching and lack of supportive supervisory feedback. The study recommends mapping teacher education courses to ensure that ICT and expert feedback are covered before teaching practice by offering coursework on modern accessible ICT and facilitating rigorous microteaching experiences. On top, given some confounding variables, train enough teaching practice supervisors, put careful consideration to school placements and have a well-planned timely posting of student teachers.

In teacher preparation, educational accrediting bodies identify specific standards by which teacher performance is evaluated (Ministry of Education, 2013; Council for the Accreditation of Educator Preparation [CAEP], 2013). In Kenya these standards are part of the quality assurance standards (http://www.education.go.ke). While most teacher education program focus on equipping the student teacher with standards, the degree of how well prepared the teacher candidates are upon graduation is unclear.

One of the required accrediting standard is for the student teacher to intern or practice. CAEP (2013) notes, “the provider ensures that effective partnerships and high-quality clinical practice are central to preparation …” (http://caepnet.files.wordpress.com/2013/09/final_board_approved1.pdf, p. 6). Internship is an important component of any professional training since it provides the opportunity to translate theory into practice (Glickman & Bey, 1990; McIntyre, Byrd, & Fox, 1996). In teacher preparation, the internship is normally in form of teaching practice (TP). During TP, the student teacher is obligated to prepare and teach lessons in a classroom setting. At this time, student teacher is observed and given feedback on lesson planning and teaching by a supervisor. Student teacher’s performance is assessed on various skills such as the ability to:
Create a learning environment that encourages positive social interaction, active engagement in learning, and self-motivation.

Create learning experiences that make the subject matter meaningful to students.

Use a variety of instructional strategies to encourage students’ development of critical thinking, problem solving and performance skills.

Plan instruction based upon knowledge of subject matter, students, and curriculum goals.

Use effective verbal, nonverbal, and media communication techniques to foster active inquiry, collaboration, and supportive interaction in the classroom.

Provide learning opportunities that support students’ intellectual, social, and personal development.

Create instructional opportunities that are adapted to diverse learners.

Use formal and informal assessment strategies to evaluate and ensure the continuous intellectual, social, and physical development of learners.

Integrate Information Communication Technology (ICT) in teaching.

The student teacher’s effectiveness on these skills during the TP experience can be impacted by a variety of factors. According to Beck (2002) the quality of a student teacher’s performance in TP is mostly affected by the quality of the preparation education courses take prior to the TP experience and the supervision and feedback that the student teacher receives. Other influencing factors may include (a) how the teaching practice process is managed (b) the structure of the teaching practice, and (c) the relationships that the student teacher develops with other school personnel (Beck, 2002; Wyss, Siebert & Dowling, 2012).

Problem
There are a myriad of challenges that affect the quality of TP, but herein, in the listed order we have discussed some issues namely ICT, large TP student teacher enrollments, quality of supervision and placement.

Many African governments identify the ability to use ICT as being critical to the general society and in job markets. Little attention is paid on equipping student teachers with ICT skills since these resources are lacking or inadequate. Clearly then the graduating student teacher will not be sufficiently prepared for the teaching and learning. A survey study by Udeani and Ejikeme (2011) notes “inadequate preparation in the use of ICT for teaching was recorded for the teachers … [yet] ICTs are having a huge impact on everyday classroom activities. … The obvious implication … is that teacher preparation programs must equip teachers with ICT skills needed for knowledge creation and dissemination” (p. 535).

In an investigation of models for preservice teachers’ use of technology to support student-centered learning, Chen (2009) found a disconnection between what students’ technological learning needs were and the teachers’ readiness to support them. This study recommended that teacher education programs need to adequately prepare and empower future educators to become active members of 21st century for teaching and learning.

Beyond technological resources and skills, many African universities typically experience very large enrollments in teacher education programs. Thus the TP exercise is faced with many structural problems, mainly placement, financing of the TP exercise, and supervision. In Kenya for example, there has been massive expansion of varied local universities dealing with teacher education program with huge student enrolments, which exert pressures to both human and physical resources and are bound to lower the quality of teacher preparation.
According to a survey carried out by Kenyatta University in July 2012 as part of the baseline data for the *Capacity Building through Teacher Education Project* supported by the Higher Education for Development (HED) and USAID, the number of universities offering education degrees has increased from four national universities (Kenyatta University, University of Nairobi, Moi University and Egerton University) to thirty-six universities and constituent colleges (without counting private universities) in the last 10 years. An overwhelming 800% increase of student teachers with minimal increment in school placements and experienced supervisors to go around! The new universities and university colleges have to share supervisors who originally were very able to handle few student teachers in the four national universities.

The current state of affairs shows that there are not enough supervisors with expertise and skills to carry out effective TP supervisory roles. For example, in 2011, Kenyatta University sent 2975 student for teaching practice, which is an insurmountable number of student teachers to be supervised by the limited number of supervisors. The data for these students completing the TP exercise showed that while they were supposed to be observed and assessed a minimum of six times, they were only supervised once or twice. Special content areas like foreign language have few supervisors’ forcing them to travel long distances to offer their expert feedback to student teachers.

These large enrollments lead to compromised excellence and expectations. Debriefing and feedback discussion of observed lessons by the supervisors has become a rare feature of TP given that a supervisor has to observe many student teachers that also happen to be in different schools that are not of close proximity to each other. This forces the supervisor to exit quickly to supervise other student teachers without providing the appropriate support to the observed student teacher.

Placement of student teachers is another challenge facing African universities, given the large number of students to be placed at school across broad geographic areas, usually the entire nation.
Thus the location of a school could be urban, suburban, or rural. There exists an unhealthy stigma regarding rural localities. Mukeredzi and Mandrona (2013) looked at opportunities and challenges experienced by undergraduate student teachers posted in the schools within the rural locations. One of their findings was that student teachers felt that the cooperating teachers “offloaded” their responsibilities to them. Secondly, school administrators often request student teachers depending on the staffing needs of their schools. This means that a student teacher ends up in a school that does not have expert host teacher in the student teacher’s appropriate subject area. Thirdly, in understaffed schools, some cooperating teachers feel relieved by the incoming student teacher and therefore may not look into his/her lesson preparation nor observe its execution.

**Purpose of the Study**

Our research study focused on both pedagogical and structural issues associated with the goal of identifying the areas that can be reformed to improve TPs’ quality. But in this paper we only dwell on the pedagogical TP issues regarding how the student teacher felt prepared, was able to apply theories learned in a classroom situation and perceived usefulness of feedback provided by the cooperating teacher, head of department, and the university supervisors.

**Research Questions**

1. To what extent does the teacher preparation program equip student teachers for their teaching performance expectations?

2. How adequately were the student teachers prepared to employ the learned abilities and skills when delivering content in the classroom?

3. To what extent did student teachers value the feedback given to them by the mentor teachers, school administration and TP supervisors? And

4. What were the challenges experienced during the TP exercise?
Methodology

Sampling

Survey data was collected during the student teaching semester in June, July and August of 2012, in Kenya from the participating University. The school placements were spread all over the country. At this time, the country had eight geographical provinces with a total of forty-seven districts. During this summer semester the TP administrators, subdivided the entire school placements into 30 TP zones. Each zone was assigned a faculty to serve as its area coordinator.

Strategic sampling was used to identify the zones and schools for data collection. A third of the TP zones were selected leading to 10 zonal areas for this study. In each area, six schools were selected. The distribution of the schools in each TP area was as follows – a national school; a provincial boys’ school; a provincial girls’ school; a district boys’ school; a district girls’ school and a private school. Table 1 below summarizes the sampling grid for one of the TP zone. For each school 6 student teachers were selected. In addition, 4 cooperating teachers and/or Heads of Departments were selected; the school principal was interviewed, and the area supervisor for each area was interviewed too. Table 2 summarizes the total sample for all the selected 10 TP zones.

Table 1: Sampling grid for one of the TP zone

<table>
<thead>
<tr>
<th>School Type</th>
<th>Number of Student teachers</th>
<th>Number of Cooperating Teachers/ Head of Department</th>
<th>Principals</th>
<th>Area Supervisor</th>
</tr>
</thead>
<tbody>
<tr>
<td>National</td>
<td>6</td>
<td>4</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Provincial Girls</td>
<td>6</td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Provincial Boys</td>
<td>6</td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>District Girls</td>
<td>6</td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>District Boys</td>
<td>6</td>
<td>4</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 2: Total sample grid for the whole TP research (10 out of 30 zones were sampled)

<table>
<thead>
<tr>
<th>TP Zone</th>
<th>No. Schools</th>
<th>TP students</th>
<th>Cooperating Teachers/ HoDs</th>
<th>Area Supervisors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nairobi East</td>
<td>6</td>
<td>36</td>
<td>24</td>
<td>1</td>
</tr>
<tr>
<td>Nairobi West</td>
<td>6</td>
<td>36</td>
<td>24</td>
<td>1</td>
</tr>
<tr>
<td>Kiambu</td>
<td>6</td>
<td>36</td>
<td>24</td>
<td>1</td>
</tr>
<tr>
<td>Muranga/ Nyeri</td>
<td>6</td>
<td>36</td>
<td>24</td>
<td>1</td>
</tr>
<tr>
<td>Kakamega/ Vihiga</td>
<td>6</td>
<td>36</td>
<td>24</td>
<td>1</td>
</tr>
<tr>
<td>Bungoma/ Busia</td>
<td>6</td>
<td>36</td>
<td>24</td>
<td>1</td>
</tr>
<tr>
<td>Kisii Area</td>
<td>6</td>
<td>36</td>
<td>24</td>
<td>1</td>
</tr>
<tr>
<td>Nyamira Area</td>
<td>6</td>
<td>36</td>
<td>24</td>
<td>1</td>
</tr>
<tr>
<td>Mombasa Malindi A</td>
<td>6</td>
<td>36</td>
<td>24</td>
<td>1</td>
</tr>
<tr>
<td>Mombasa Malindi B</td>
<td>6</td>
<td>36</td>
<td>24</td>
<td>1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>60</strong></td>
<td><strong>360</strong></td>
<td><strong>240</strong></td>
<td><strong>10</strong></td>
</tr>
</tbody>
</table>

**Instruments**

A survey questionnaire was developed for collecting data from the student teachers. The first item dealt with biographic data about the participants including gender, teaching subject areas and type of school where the student teacher was placed. The second, third and fourth sections of the questionnaire focused on a self-evaluation of a range of pedagogical related aspects of teaching based on a 5-point Likert scale questionnaire. For the same range of pedagogical aspects, the student teachers were asked to evaluate how well the teacher education program prepared them in acquiring
these skills, the extent to which they were able to apply these skills during their student teaching practice and the extent to which the mentoring and evaluation feedback from their supervisors enhanced their ability to apply these skills in teaching.

A different survey questionnaire was given to cooperating teacher and the Head of Department (HoD). In many cases, the cooperating teacher was also the HoD. The questions in this survey focused on the same pedagogical aspects addressed in the student teacher questionnaire but asked the cooperating teachers and HoDs to indicate the extent to which the student teacher was able to apply these pedagogical skills in their teaching. The survey also included other information such as the frequency of observations they conducted with their student teachers.

The other two instrument used in data collection were interview schedules for the principal and for the area supervisor. The principal interview schedule was on their views about the university’s TP program and about the university student teachers at their school. The area supervisor interview schedule covered the number of student teachers in the area, the role of area supervisor, the challenges faced and the strategies adopted to address these challenges.

**Data Collection**

In each school a researcher a) administered TP students questionnaires to all student teachers at the school, b) administered the questionnaire to 4 Cooperating teachers/ Heads of Department (1 Mathematics, 1 Sciences, 1 Languages and 1 Social studies), and c) interviewed the principal. The researcher also interviewed the TP area supervisor as shown in Table 1. The questionnaires were completed by paper and pencil by the respondents while the interviews were audiotaped and later transcribed.

**Data Analysis**
The data were synthesized using *Survey Monkey*. The descriptive statistics were generated and qualitative data grouped by question for further analysis. The student responses (1) on the extent to which they were well prepared to with teaching skills, (2) to apply the skills and (3) usefulness of the feedback from supervisors were compared to identify areas with high percentage scores versus lower percentage scores. Because this was a self-rating survey, it is typical that students would rate themselves highly on most of the items. As such the scores on the highest level of the Likert’s scale were considered (the “very good” scale). Percentage scores above 50% were considered as areas of positive performance while areas with less than 50% were considered as areas of weakness. The qualitative data from the interviews and additional comments were read and re-read by the research team members to identify common themes.

**Findings from Quantitative Data**

*Perceptions of how education program prepared student teacher for TP*

The percentage of student teachers who checked the “very good” rating scale were generated as seen in Table 3 regarding the self-rating of how the teacher education program prepared the student teachers on the various pedagogical aspects of TP. Scores of less than 50% are highlighted in bold font. The student teachers felt adequately prepared in 5 out of the 11 pedagogical areas surveyed. The areas where there was satisfaction on how well they are prepared include: creating a learning environment that encourages positive social interaction, active engagement in learning, and self-motivation (66.7%); create learning experiences that make the subject matter meaningful to students (59.1%); fostering relationships with school colleagues, parents, and agencies in the larger community to support students’ learning and well-being (58.7%); using a variety of instructional strategies to encourage students’ development of critical thinking, problem solving and performance
skills (56.6%); and planning instruction based upon knowledge of subject matter, students, and curriculum goals (56.0%).

Table 3: Student teacher perceptions on how well prepared they were for teaching practice

<table>
<thead>
<tr>
<th>Teaching Performance Aspect</th>
<th>Extent of Preparedness (n= 177)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Create a learning environment that encourages positive social interaction, active engagement in learning, and self-motivation.</td>
<td>66.7 %</td>
</tr>
<tr>
<td>Create learning experiences that make the subject matter meaningful to students</td>
<td>59.1 %</td>
</tr>
<tr>
<td>To foster relationships with school colleagues, parents, and agencies in the larger community to support students’ learning and well-being.</td>
<td>58.7 %</td>
</tr>
<tr>
<td>Use a variety of instructional strategies to encourage students’ development of critical thinking, problem solving and performance skills.</td>
<td>56.6 %</td>
</tr>
<tr>
<td>Plan instruction based upon knowledge of subject matter, students, and curriculum goals</td>
<td>56.0 %</td>
</tr>
<tr>
<td><strong>To be a reflective practitioner who continually evaluates the effects of his/her choices and actions on others (students, parents, and other stakeholders in the learning community) and who actively seeks out opportunities to grow professionally</strong></td>
<td>49.7%</td>
</tr>
<tr>
<td>Use effective verbal, nonverbal, and media communication techniques to foster active inquiry, collaboration, and supportive interaction in the classroom.</td>
<td>46.9%</td>
</tr>
<tr>
<td>Provide learning opportunities that support students’ intellectual, social, and personal development</td>
<td>45.8%</td>
</tr>
<tr>
<td>Create instructional opportunities that are adapted to diverse learners.</td>
<td>44.6%</td>
</tr>
<tr>
<td>Use formal and informal assessment strategies to evaluate and ensure the continuous intellectual, social, and physical development of learners.</td>
<td>44.0%</td>
</tr>
<tr>
<td>Integrate ICT in my teaching.</td>
<td>15.4%</td>
</tr>
</tbody>
</table>
The areas where the student teachers perception were low include: the ability to integrate ICT in teaching (15.4%); the use of formal and informal assessment strategies to evaluate and ensure continuous intellectual, social, and physical development of learners (44.0%); the creating of instructional opportunities that are adapted to diverse learners (44.6%); the planning of learning opportunities that support students’ intellectual, social, and personal development (45.8%); the use of effective verbal, nonverbal, and media communication techniques to foster active inquiry, collaboration, and supportive interaction in the classroom (46.9%); being a reflective practitioner who continually evaluates the effects of his/her choices and actions on others (students, parents, and other stakeholders in the learning community) and one who actively seeks out opportunities to grow professionally (49.7%).

**Perceptions of how student teacher applied theory during TP**

On the self-rating of the ability to implement various teaching and learning strategies in their TP, the percentage of student teachers rating the preparation as “very good” were generated as shown in Table 4. On the same list of pedagogical aspects, student teachers ratings show that they were very able to apply all these skills during their teaching practice except in the area of ICT integration in teaching (20.9%).

**Table 4: Student teacher perceptions of how well they were able to apply the learned skills during TP**

<table>
<thead>
<tr>
<th>Teaching Performance Aspect</th>
<th>The ability to implement (n=177)</th>
</tr>
</thead>
<tbody>
<tr>
<td>To foster relationships with school colleagues, parents, and agencies in the larger community to support students’ learning and well being.</td>
<td>70.1 %</td>
</tr>
<tr>
<td>Create a learning environment that encourages positive social interaction, active engagement in learning, and self-motivation.</td>
<td>67.8 %</td>
</tr>
<tr>
<td>Perceptions of effectiveness of feedback from cooperating teachers/HoDs</td>
<td></td>
</tr>
<tr>
<td>---------------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td><strong>Create learning experiences that make the subject matter meaningful to students</strong></td>
<td>62.7 %</td>
</tr>
<tr>
<td><strong>Use effective verbal, nonverbal, and media communication techniques to foster active inquiry, collaboration, and supportive interaction in the classroom.</strong></td>
<td>61.6 %</td>
</tr>
<tr>
<td><strong>Provide learning opportunities that support students’ intellectual, social, and personal development</strong></td>
<td>58.8 %</td>
</tr>
<tr>
<td><strong>Plan instruction based upon knowledge of subject matter, students, and curriculum goals.</strong></td>
<td>58.5 %</td>
</tr>
<tr>
<td><strong>To be a reflective practitioner who continually evaluates the effects of his/her choices and actions on others (students, parents, and other stakeholders in the learning community) and who actively seeks out opportunities to grow professionally</strong></td>
<td>57.1 %</td>
</tr>
<tr>
<td><strong>Use a variety of instructional strategies to encourage students’ development of critical thinking, problem solving and performance skills.</strong></td>
<td>55.4 %</td>
</tr>
<tr>
<td><strong>Use formal and informal assessment strategies to evaluate and ensure the continuous intellectual, social, and physical development of learners.</strong></td>
<td>53.1 %</td>
</tr>
<tr>
<td><strong>Create instructional opportunities that are adapted to diverse learners.</strong></td>
<td>52.1 %</td>
</tr>
<tr>
<td><strong>Integrate ICT in my teaching.</strong></td>
<td>20.9 %</td>
</tr>
</tbody>
</table>

Table 5 is data generated from the self-rating regarding the extent to which the cooperating teachers and/or HoDs evaluation and feedback enhanced the student teachers’ ability to perform on the various pedagogical aspects of TP. The data shows that the teacher candidates found the feedback to be useful in enhancing their abilities on all of the pedagogical aspects of teaching except in three areas. One of the areas where the feedback was found not to be useful was the ability to be a reflective practitioner who continually evaluates the effects of his/her choices and actions on others, i.e. students, parents, and other stakeholders in the learning community, and who actively seeks out...
opportunities to grow professionally (49.4%).

Table 5: Student teacher perceptions of the effectiveness of feedback from cooperating teacher and HoD

<table>
<thead>
<tr>
<th>Teaching Performance Aspect</th>
<th>Cooperating Teachers/HoD: feedback effectiveness (n=177)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plan instruction based upon knowledge of subject matter, students, and curriculum goals.</td>
<td>63.8 %</td>
</tr>
<tr>
<td>Use effective verbal, nonverbal, and media communication techniques to foster active inquiry, collaboration, and supportive interaction in the classroom.</td>
<td>61.1 %</td>
</tr>
<tr>
<td>Create a learning environment that encourages positive social interaction, active engagement in learning, and self-motivation.</td>
<td>61.0%</td>
</tr>
<tr>
<td>Create learning experiences that make the subject matter meaningful to students</td>
<td>60.0 %</td>
</tr>
<tr>
<td>Use a variety of instructional strategies to encourage students’ development of critical thinking, problem solving and performance skills.</td>
<td>59.1 %</td>
</tr>
<tr>
<td>Create instructional opportunities that are adapted to diverse learners.</td>
<td>58.1 %</td>
</tr>
<tr>
<td>Provide learning opportunities that support students’ intellectual, social, and personal development</td>
<td>57.8 %</td>
</tr>
<tr>
<td>To foster relationships with school colleagues, parents, and agencies in the larger community to support students’ learning and well-being.</td>
<td>52.0 %</td>
</tr>
<tr>
<td><strong>To be a reflective practitioner who continually evaluates the effects of his/her choices and actions on others (students, parents, and other stakeholders in the learning community) and who actively seeks out opportunities to grow professionally</strong></td>
<td><strong>49.4 %</strong></td>
</tr>
<tr>
<td>Use formal and informal assessment strategies to evaluate and ensure the</td>
<td><strong>46.6 %</strong></td>
</tr>
</tbody>
</table>
Integrate ICT in my teaching. | 17.0 %

A second unhelpful feedback was the use of formal and informal assessment strategies to evaluate and ensure the continuous intellectual, social, and physical development of learners (46.6%). The feedback on ICT integration in teaching was the least useful (17.0%).

**Perceptions of effectiveness of feedback from university supervisor**

Student teachers ratings on the effectiveness of feedback from university supervisor are in Table 6. The same three areas of unhelpful feedback from cooperating teacher/HoD are also noted with the university supervisor’s data.

Table 6: Student teacher perceptions of the effectiveness of university supervisor’s feedback

<table>
<thead>
<tr>
<th>Teaching Performance Aspect</th>
<th>University supervisor: feedback effectiveness (n=177)</th>
</tr>
</thead>
<tbody>
<tr>
<td>To foster relationships with school colleagues, parents, and agencies in the larger community to support students’ learning and well-being.</td>
<td>59.6 %</td>
</tr>
<tr>
<td>Provide learning opportunities that support students’ intellectual, social, and personal development</td>
<td>58.0 %</td>
</tr>
<tr>
<td>Create a learning environment that encourages positive social interaction, active engagement in learning, and self-motivation.</td>
<td>57.1 %</td>
</tr>
<tr>
<td>Plan instruction based upon knowledge of subject matter, students, and curriculum goals.</td>
<td>56.0 %</td>
</tr>
<tr>
<td>Create learning experiences that make the subject matter meaningful to students</td>
<td>52.0 %</td>
</tr>
<tr>
<td>Use a variety of instructional strategies to encourage students’ development</td>
<td>52.0 %</td>
</tr>
</tbody>
</table>
Critical thinking, problem solving and performance skills.

<table>
<thead>
<tr>
<th>Task</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Create instructional opportunities that are adapted to diverse learners.</td>
<td>51.2 %</td>
</tr>
<tr>
<td>Use effective verbal, nonverbal, and media communication techniques to foster active inquiry, collaboration, and supportive interaction in the classroom.</td>
<td>50.9 %</td>
</tr>
<tr>
<td>To be a reflective practitioner who continually evaluates the effects of his/her choices and actions on others (students, parents, and other stakeholders in the learning community) and who actively seeks out opportunities to grow professionally</td>
<td>47.1 %</td>
</tr>
<tr>
<td>Use formal and informal assessment strategies to evaluate and ensure the continuous intellectual, social, and physical development of learners.</td>
<td>45.6 %</td>
</tr>
<tr>
<td>Integrate ICT in my teaching.</td>
<td>17.9 %</td>
</tr>
</tbody>
</table>

Comparisons of TP teaching performance from Tables 3, 4, 5, and 6, consistently show low ratings for ICT integration. Another area with consistently low rating is the use of formal and informal assessment strategies to evaluate and ensure the continuous intellectual, social, and physical development of learners.

**Findings from Qualitative Data**

In addition to the surveys ratings data, the student teachers were asked open-ended questions about other aspects of TP that they would like to see improved. Data from these responses were categorized into the following themes: resources, teaching methods, ICT, supervision, feedback and overall TP exercise. Two of these themes, ICT and supervision, are discussed below given the quantitative data are consistent with the qualitative data from interviews.

*Information and Communication Technology (ICT)*
The student teachers consistently cited ICT as an area they would like to see improved in their teacher education program. They suggest that ICT be made a course requirement that must be taken before being cleared for the TP exercise. One student stated that…

“The institution should encompass more ICT integration in TP training and provide material to facilitate improving the ICT in learning.”

The student teachers also reported the need for ICT services to be open to all students and not just to a selected group of students i.e. those participating on grant projects, students teaching math and science subjects. The student teachers called for opportunities to practice ICT skill: a student stated that “Students should be given opportunity to have an experience in PowerPoint presentation, not just learning about it verbally as this brought us challenges in the school where we had our teaching practice, since it has the facility but we lacked the knowledge.” Other student teachers pointed to the need for subject specific technology support: “Student teachers should be equipped with the ICT knowledge in order to apply it effectively in their teaching i.e. the teaching of field work in Literature and other disciplines such as Geography requires a lot of ICT.” It is evident from the student observations that they recognize the need and the potential the ICT has to their teaching.

**Supervision**

The student teachers cited a number of challenges they experienced during TP that were connected to supervision. First issue was the fact that supervisors are assigned by region rather than by subject area. Several student teachers point to the need to have supervisors who teach the subject areas they supervised e.g. a student teacher stated: Lecturers (University supervisor) should be familiar with the subjects he or she is supposed to supervise. Subject experts should be used preferentially for assessment. Second issue dealt with frequency of the university supervisor’s visits. Several respondents pointed to “Frequent supervision of the student teacher” and “the assessors [referring to
university supervisors] should visit or see the students as many times as possible." Third issue was about the communication between the university supervisors, the student teachers and the school personnel. Some commented on the need for supervisors to let the student teachers know about when they will be observed: “The supervisors are supposed to inform student-teachers earlier in advance and not impromptu visits since most of us become tensed.” Similar remarks pointed to communications between area coordinators, supervisors and the student teachers. “…also communications with the school administrators because the school programs are not fixed but sometimes flexible. That is they are affected by some extra activities like AGM [Annual General Meetings], staff meetings and curriculum activities.”

Lastly, several student teachers called for observation by external supervisors. Such comments included: “Apart from internal supervisors, external supervisors should be encouraged (motivated),” “Introduce the use of external examiners during supervision” and “External supervisors should be involve in supervision.”

**Discussion and Recommendations**

**Student Teacher’s Preparedness for Teaching**

The most critical area that needs to be address in the teacher education program is the integration of ICT in teaching and learning. A number of issues arise from the data with regard to preparation in ICT. It is evident that the student teachers have little or no preparation on ICT integration. There are also no clear expectations for student teachers to integrate ICT during TP. Given the increasing influence that technology has on teaching and learning today, it is critical that this issue is given utmost consideration as part of the teacher education program. Any consideration on how to make ICT part of the teacher education program needs to consider that the concept of technological pedagogical content knowledge (TPACK) which has emerged over the last decade.
The TPACK framework builds on Shulman (1986 and 1987) conception of pedagogical content knowledge, by explicitly integrating the component of technological knowledge into the model. The framework includes three core categories of knowledge: pedagogical knowledge, content knowledge, and technological knowledge. The TPACK framework proposes that combining these three core types of knowledge results in four additional types of knowledge including technological pedagogical content knowledge as a part of the model (Akarasriworn & Ku, 2010; Mishra & Koehler, 2006).

Apart from teaching about technology integration, teacher education faculty need to model current appropriate technologies in their own classrooms and offer hands-on task so that student teachers not only learn about technology integration but also experience it in their own learning.

The student teachers’ high ratings on their ability to perform on the various pedagogical aspects of teaching may be a pointer to the degree of confidence they carry to the field from their coursework. While the rating on how they feel prepared is low, the rating on their ability to perform is much higher. This could be attributed to the fact they were completing these surveys during student teaching, a time when they are also faced with the stress of being evaluated on their performance. It is therefore expected that they would want to position themselves as performing strongly while at the same time pointing to a lack of preparedness in the event that they are thought not to be performing well. The areas of well preparedness are closely tied to the ability to create meaningful learning environment for students in general. These areas include planning for instruction, engaging students in active learning.

The student teachers feel they are not well prepared in more than half of the teaching performance expectation areas. The areas with low self-ratings are of significance. The areas with low rating on preparedness and ability to teach cut across a range of teaching performance aspects.
Because these aspects are taught in general education courses, student teachers may be failing to see how they apply directly to their TP classroom during student teaching.

We recommend a curriculum mapping exercise in which all the student teacher performance expectations are mapped against the teacher education classes. Such reviews of the curricula beyond the pedagogy specific courses need to be carried out to evaluate how well these courses align with the identified areas. Questions need to be asked of particular courses where the student teachers are learning for example, reflecting on practice as well as strategies they are provided to enable this to occur. Periodic review of the curriculum is also necessary to ensure that the courses are up to date with the current research on issues of teaching, learning and teacher preparation.

Another area of the curriculum that needs addressing in the education classes is how to handle students with diverse needs. It is important for student teachers to develop skills of supporting all learners in their classrooms, because they are often placed in schools where the host teacher does not do provide the much needed guidance. Mukeredzi and Mandrona (2013) propose that teacher preparatory programs should include a course that covers student teachers ability to persevere, and have “resilience, stress management and most importantly creativity and flexibility” (p. 151), and such a course is to be taken before TP exercise.

**Issues Relating to Supervision**

According to the participant’s Student Handbook, student teachers are initially to be observed by the pedagogy faculty to examine the student teachers’ schemes of work and lesson plans before they start teaching and be supervised at least six times, that is a minimum of three observations per teaching subject (major and minor). The grade given at the end of teaching practice becomes part of the student teacher’s classification. This structure faces a number of challenges when it comes to the
actual assignment of supervisors during TP. There are not enough supervisors to observe a total of six observations per student teacher.

Another issue with supervision was about communication between and among the participants in the TP exercise ranging from the TP placement office, the area coordinators, the university supervisors, the school administrators and student teachers. During TP supervisors are supposed to inform student teachers earlier in advance about the visitation and not make impromptu visits as this often make students tense. On supervision, the institutions offering teacher education should plan to have adequate staff in respective teaching areas to offer expertise feedback during TP. The TP exercise will not be meaningful if reports are not reflective and feedback does not help the student teacher improve in the areas of weakness.

Ayot and Wanga (1987) enumerated in their book, fifteen principles “of effective supervisory feedback.” The first principle is in agreement with what Nguyen (2009) points out that mentors or supervisors to be supportive of student teachers to enable them reflect-in and reflect-on practice by being “clear in their expectations of self and other” (p. 660). These principles should be made accessible to the supervisors. Moreover, the student teachers should be provided with a reflection guideline or tool that is tied to the essential elements of instruction (Hunter 1986). Ochanji (in press) suggested five guiding questions for helping student teachers reflect on the essential elements of their teaching namely 1) What goals did you have for your students for this lesson? 2) What learning activities did you engage your students with in order to help them make progress towards the leaning goals? 3) How effective were these strategies in helping your students to make progress towards the learning goals? 5) What evidence of student learning and/or learning difficulties did you collect from your students? The supervisors should have a good understanding of the relevant resources used in teaching in order to guide the student teachers towards the resources available for them in school and
beyond as they consider how to adjust their lesson plans for better student learning. The purpose for doing TP will not meaningful to the student teachers unless the feedback is reflective of their abilities and is informative.

The issue with supervision raised by student teachers about the need for subject area specific supervisors assessing them during teaching practice is a difficult one to overcome given the number of students going for TP at a given time and the vast area in which the postings occur. One possibility to ensure that the supervisors are versed with the subject content is to group them by the subject panel area such as Mathematics and Science Education, Social Studies Education supervisors, Language Education, Creative Art Education and Physical and Health Education. Any specialist in the subject panel areas should supervise group of subjects e.g. Chemistry, Biology, Physics and Mathematics. When these supervisors visit a school site, they should be allowed to assess any student at that site who is teaching within the subject panel of their specialty. Student teacher should keep a visitation log in which the supervisors sign in to show what subject areas they have been assessed in. The idea of using co-operating teachers as mentors is good if only the responsibility does not go beyond mentoring the student teacher and not doing a supervision report to the university which could be used for grading and classifying the student teacher for graduation.

Notes

This research was funded in part by the US Higher Education for Development (HED) and the United States Agency for International Development (USAID) under the Building Capacity through Quality Teacher Education Project.

References

for information technology & teacher education International conference, 258–263.


doi:10.1016/j.compedu.2009.11.015


Abstract

Major purpose of this survey study was to identify the secondary school students' perceptions about instructional practices of their mathematics' teachers in the context of TARGET model. TARGET model presents patterns of six instructional practices (i.e., Task, Authority, Recognition, grouping, Evaluation, and Time) in classroom to endorse mastery or performance goals orientation in student. Population of the study was secondary school students in the province of Punjab. Multi stage random sampling technique was used for the selection of sample. An adapted questionnaire “Achievement Goal Orientations and Perceptions about Teachers' Instructional Practices Questionnaire (AGOPTIPQ)” from "Patterns of Adaptive Learning" Midgley et al., (2000) was used for to elicit students' responses. A pilot study was conducted to validate the instrument. Reliability index (Cronbach Alpha) was .76. Descriptive statistic was used to identify the students' achievement goal orientations and their perceptions about instructional practices of mathematics teachers. Pearson correlation coefficients were calculated to identify the relationship among students' perceptions about teachers' instructional practices and students' achievement goal orientations. It was found that students have greater performance-approach goal orientation mean score than mastery goal orientation. Results also
showed that students' perceptions and their achievement goal orientations were statistically significantly positively correlated. Results were tabulated and recommendations were made in the light of major findings.

Key words: Achievement goal orientation, instructional practices, mathematics teachers, TARGET model
Title of the submission:
Examining the Motivation of Vietnamese University Students to Learn English in the Light of the Expectancy-Value Model of Motivation

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Abstract

This study examines students’ ability-related beliefs about learning English and the value they attach to learning English. Approximately 1200 first-year students (50% male, 50% female) at three universities in Ho Chi Minh City participated in the study. Both quantitative data (a survey) and qualitative data (interviews) were gathered.

The values of studying English included intrinsic value, utility value, attainment value, and cost value. In addition, a value labelled “family honour” was added to the theory’s existing set of values.

The study examines the relative influence of students’ perceptions of their ability to learn English and the value they put on learning English on two variables: (1) their achievement in English, and (2) their intention to enrol in additional English classes. In addition to these analyses, the study examines differences between male and female students on these measures.

Preliminary analyses of the quantitative data show that students’ expectancy to do well in English and the value they attach to doing well (including the additional value of family honour) affect their achievement in English and their willingness to undertake additional English courses. Female students demonstrated more positive competence (expectancy) beliefs about doing well in English and more strongly held values than male students for learning English. Students’ beliefs about their ability and their expectancies for success are strong predictors of achievement in English, while the value attached to learning English is a strong predictor of willingness to take extra English courses.

The transcriptions of the interview data provide additional insights into the application of a motivational model developed within in a Western context to a Vietnamese context.
1. Title of the submission:  Meet me at the Commons: Why Higher Education Faculty Should Align with P-12 Standards

   #1265

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Right now, the pieces of high school and higher education are not fitting. But the new college- and career-ready standards present an opportunity for states to reexamine and rebuild the connection. To prepare students to succeed in college and beyond, the spirit of these standards—alignment—needs to go to college as well. (Tepe, 2014, p.3)

In the summer of 2014 three state university system Chancellors implored higher education to join Higher Education for Higher Standards, a coalition to support the Common Core State Standards (CCSS) (Kirwin, White, & Zimpher, 2014). The chief officers of over 240 colleges and universities from 36 states and eight national higher education professional organizations have since signed on in support of this coalition. The CCSS were initially completed in 2009 and have been adopted by 43 states, the District of Columbia and several territories, but five years later, little impact has been felt in higher education (Common Core State Standards Initiative, 2014).

The road to the Common Core has not been built in a straightforward, progressive direction. Unlike the Oregon Trail, this road wasn’t built as we moved toward our destination. Nor has it been built like the first Transcontinental Railroad, starting simultaneously at the beginning and at the end, then meeting in the middle. This road started near the end, though not in collaboration or close communication with those we were hoping to reach.
The CCSS were born out of widespread concern that high school students were entering college and the workplace woefully unprepared. Nationally, only 20.5% of high school 9th graders graduate from high school and complete a four year degree in six years (NCHEMS, 2014). For ten years, the National Governor’s Association, the Council of Chief State School Officers (2010a), and Achieve, Inc. led education and content specialists through a process of defining English language arts and mathematics “college and career readiness” knowledge and skills, then “back mapped” these standards all the way to kindergarten.

Now, even with the political upheavals surrounding the CCSS, most states are moving forward on this new Common Core expressway with a great sense that there is an educational El Dorado at the end of the road. Unfortunately, higher education is not creating an exit ramp at their end of the road.

Why align with the Common Core standards?

If the CCSS are to advance college and career readiness, higher education has to be in the loop. Most urgently, teacher preparation programs must ensure that all pre-service teachers have mastered the knowledge and skill set for the grade levels and subjects they will be licensed to teach. But equally as important, all current and prospective teachers must be prepared to teach these new standards, as well. These standards are not as much about piling on more facts, but developing a student’s knowledge and skills to support critical and creative thinking, problem-solving, and analytical skills. While neither the Common Core nor the Next Generation Science Standards (NGSS) specify instructional methods per se, these standards are likely to generate significant shifts in pedagogical practice (Alberti, 2012). For example, in order to move
students to analyzing complex texts, teachers are incorporating “close reading” strategies, and teachers of mathematics are putting more emphasis on mathematical practices and problem solving. The goals of aligning content knowledge and pedagogy require substantial change not only in teacher education programs and courses, but also in the content classes, taught primarily in the Colleges of Arts and Sciences.

By the same token, the CCSS should result in changes for all students entering college. “A real P-20 system, one covering preschool through graduate school, would have curriculums that line up. And if the Common Core prepares students better, or even differently, 100-level courses in math, English and language arts should be changed to pick up where high school left off,” (Nelson, 2013, para. 58). College courses should facilitate their students’ continued learning and readiness for a career and/or further post-baccalaureate success.

The job of college faculty is no longer to weed out the unprepared, immature, or even the irresponsible students, but to meet all students where they are and help them succeed. Our goal is student success and retention – not failure. It is time for college faculty to realize that we are no longer gatekeepers who rank our students and then set limits to the number who can advance. We all share responsibility for our students’ success. College faculty are part of an academic relay team, carrying students forward, then passing them on to the next member of the team.

All of us, teacher education and content faculty, prepare future teachers in pedagogy as well as content knowledge and skills. Teachers emulate the pedagogy they experienced as college students when they teach. Some of their students come to college, some better prepared than others. A portion of these graduate, start their careers and lives; a small
percentage go on to graduate school; others become teachers. Most become parents and encourage their children to be learners. The cycle continues (see Figure 1). We reap the academic seeds we sow.

*Figure 1:* The P-20 education cycle.

Full implementation of the Common Core Standards could significantly alter higher education as we know it. These changes could “Transform dual enrollment programs, placement tests, and remediation. They could force colleges within state systems, and even across states, to agree on what it means to be ‘college ready,’ and to work alongside K-12 to help students who are unprepared for college before they graduate from high school. In the long run, it could force changes in credit-bearing courses too, to better align with what students are supposed to have mastered by high school graduation,” (Nelson, 2013, para. 5).
With higher education administration in support of the CCSS, the pressure to align college courses will soon follow. Accrediting bodies, especially the Council for the Accreditation of Educator Preparation (CAEP), will require that institutions with teacher preparation programs demonstrate that teacher education courses and content courses are aligned to the standards. In some states, education agencies collaborate with higher education governing bodies or even state legislatures to enforce alignment. Kentucky’s Senate Bill 1 of 2009 is one example. This innovative legislation required the Commissioner of Education and the President of the Council on Postsecondary Education to collaborate to revise elementary and secondary standards and align those with postsecondary standards (Kentucky Department of Education, 2009).

Where, then, do we draw the academic freedom line between program accreditation standards and an individual faculty member’s knowledge and expertise? To what degree should professional accrediting bodies, government agencies, or even learned societies prescribe the content and skills that should be taught? These are questions that should and do concern higher education faculty. After all, faculty are responsible for developing and communicating the most recent research and knowledge base in their fields of expertise. On the other hand, learned societies and professional organizations represent scholarship and oversee the peer review process in most collegiate programs, especially those leading to professional licensure (i.e., the Association to Advance Collegiate Schools of Business, Commission on Accreditation of Athletic Training Education, Commission on Collegiate Nursing Education, National Association of Schools of Music, and Council for the Accreditation of Educator Preparation).

Public higher education institutions serve at the will of state and local governments,
who represent tax-paying citizens. This isn’t a straight, hard “line in the sand.” Like the path of a river, the line between academic freedom and standards curves in and around the perfect curriculum, adjusting to currents and seasonal pressures. Faculty in public institutions should provide leadership in responding to society’s needs while defending scholarship against political and religious whims, as opposed to promoting particular viewpoints.

**Why The Common Core State Standards?**

Why should we align to the Common Core Standards when several states are now rejecting them? The CCSS represent both a non-partisan political endeavor as well as a collaborative effort to meet the readiness needs for success in postsecondary education and employment. These are “state” standards, as the development was organized by the National Governor’s Association and the Council of Chief State School Officers (2010a), both of which are non-partisan and include representatives of all U.S. States and territories. Teachers, principals, superintendents, content experts (including higher education faculty), the National Education Association (NEA), the American Federation of Teachers (AFT), the National Council of Teachers of Mathematics (NCTM), and the National Council of Teachers of English (NCTE), among other organizations, participated in the development of the standards. Contrary to what some presume, the CCSS are not mandated by the Federal Department of Education, but must be adopted (or rescinded) by individual states.

Regardless of the specific standards adopted by a particular state, the ultimate goal of college and career readiness means that the similarities among state P-12 standards are going to be greater than the differences. Each higher education institution should identify its place and ultimate responsibility in the P-20 education cycle, whether that is focused on Common
Core State Standards, your own state’s “non-Common Core” or a more national or even international focus. Then, it must encourage faculty to collaborate to align and map the standards forward.

The Faculty, who are the content experts, do have legitimate concerns about academic freedom. For this reason, standards alignment should be developed from the “bottom up” – by those who will actually implement the changes in curriculum - as opposed to “top down”. Faculty would be advised to take charge of the alignment process, or a forced alignment will take charge of the faculty.

**It’s Going to Get Messy: A Model for Alignment**

Under the direction and support of the Kentucky Council on Postsecondary Education (KY CPE) Eastern Kentucky University (EKU) embarked on this standards alignment process in 2010. Instead of requiring department chairs to create impressive but inconsequential charts matching their courses to the Common Core Standards, the Curriculum Alignment for Retention and Transition at Eastern Project (CARTE) took a different, more circuitous, yet more effective route (Combs, Fair & Hearn, 2012; Combs, Fair, Althauser, & Hearn, 2012; Fair, Sweet, Blythe, Combs, & Phillips, 2013; Sweet, Blythe, Fair, Combs, & Hearn, 2012).

First, we established five Faculty Learning Communities (FLCs) for the areas of English, math, natural sciences, social sciences, and teacher education. We identified individual faculty leaders in each of these areas who were willing to serve as facilitators and invited these and other faculty to attend professional development prior to the beginning of the semester. This professional development had several purposes:

1) **Review the institution’s retention and graduation data.** In order for faculty to
recognize and accept responsibility for student success, they have to see the data. Most faculty were shocked to learn the number of students who were leaving the university after one or two semesters, or the number who failed to graduate in 6 years.

2) **Explain the history and purpose of education standards.** P-12 educators and teacher educators have been living with standards and the pressures of accountability for 30 or more years. Arts and Sciences faculty tend to hold fast to their academic independence and may be unaware of how the current standards have evolved. The point is not to reach agreement, but to be aware of current issues.

3) **Practice reading and “deconstructing” the Common Core Standards.** The Common Core Standards are complex and dense (NGA Center & CCSSO, 2010a). Arts and Sciences faculty may initially believe that these standards do not relate to their courses. This process requires collaborative, minds-on engagement and discussion. Working with content area partners, faculty read each of the College and Career Readiness standards and consider how each applies.

4) **Identify characteristics of effective FLCs.** Faculty Learning Communities have been shown to be an effective method for long-term, job-embedded professional development (Garet, Porter, Desimone, Birman, & Yoon, 2001; Graham, 2007; Darling-Hammond & Richardson, 2009; Darling-Hammond, Wei, Andree, Richardson & Orphanos, 2009). However, it is easy for FLCs to lose focus or to morph into committees. Effective FLCs must be democratic in nature, meet regularly, focus on a
specific issue, utilize data and research, and produce a final product (Sweet et al., 2012).

The FLCs then began their work, studying their content area’s connections to P-12 standards and identifying courses in their departments that should be aligned. These classes included introductory, general education courses, teacher education content courses (those content courses taken by elementary and middle grades teaching majors), and teacher education courses. The grant from the KY CPE provided stipends to those who participated in the FLC and on a per course basis for completion of revised and aligned course syllabi. The five FLC facilitators then met regularly with the project’s Executive Board, forming a “super FLC” which served as a support and problem-solving group (Sweet et al., 2012).

Make no mistake, meaningful standards alignment is not simple. This is a process that is fraught with weeds and rabbit holes. We required that the faculty teaching the course not only match student learning outcomes with specific standards, but identify how their students would be expected to know and apply the standard. We identified four different levels of application:

- **F = Factual** – Students can identify and explain what is expected by the standard.
- **I = Interpretive** – When prompted, students can apply the standard effectively in the context of the course / discipline.
- **P = Procedural** – Without prompting, students can apply the standard strategically and intentionally in the context of the course / discipline.
- **M = Metacognitive** – Students can articulate how the standard affects learning for themselves or others. (Think about their own knowledge, thinking and learning and the knowledge, thinking and learning of their students)

When teacher education majors progress to pedagogical coursework, these levels are
magnified as they develop the pedagogical knowledge and skills to teach the standards at the four levels. For example, while an introductory history instructor would expect her students to be able to read and understand a college textbook “strategically and intentionally, without prompting” (NGA Center & CCSSO, 2010b), a social studies methods course instructor will expect his students to plan and deliver instruction that teaches younger students how to read social studies content. Knowing how to apply the standard and knowing how to teach applications of the standard are two different skills.

The FLCs worked on this process for one year, completing revised syllabi and alignment charts for 64 courses. As this work was underway, the FLCs discovered additional problems and instructional design issues. First, they realized that, while their intent was to teach certain student learning outcomes, their assessments were often misaligned. That is, they weren’t assessing what they thought their students should be learning. Second, they discovered that their instruction was often misaligned as well. Even seasoned, successful faculty became aware of these gaps between their instruction and assessment. Possibly more important were the deep conversations that emerged in the FLCs. It was in this safe environment that faculty struggled with questions about the purpose of early college instruction. Is it their job to “weed out” the poorly prepared students, or to provide the additional support to encourage retention and further success? Others had the realization that their students were arriving in their classrooms without the reading or writing college readiness skills, yet the class assignments assumed they had. These “ah-ha’s” led faculty to redesign their course schedules, change textbooks, and even “flip their classrooms” to better support homework and provide on-line lectures.
After three years, the grant funds ran out, but much of the original work continues, spawning new FLCs around effective assessment and grading practices, collaboration with high school faculty, and intra-departmental collaborations on reading skills.

The CARTE project evaluation report (Combs, Fair & Hearn, 2013; Fair et al., 2013) revealed critical factors that contributed to the project’s success. This evaluation examined the impact the CARTE FLC had on faculty knowledge levels, implementation, and perceptions regarding alignment and the FLC model. The FLC process changed the level of understanding of teaching practices, Common Core standards, and awareness of teacher preparation. In addition, faculty indicated this understanding will result in changes in their classroom practice. While there was some indication that faculty did not understand how to meet the needs of undergraduate students, the changes they planned to make in the classroom (assessment, feedback, interaction, etc.) are considered best practices and will likely have a positive impact on student learning and retention.

Instructional practice is only one aspect of student retention, and it might be helpful for faculty to have a greater understanding of issues impacting student retention and graduation. Provosts and academic leadership should analyze results from the National Survey of Student Engagement (NSSE), the National Center for Education Statistics (NCES), or the National Center for Higher Education Management Systems or data from student evaluations and surveys.

The results from the CARTE project evaluation (Hearn, 2013) reiterates the critical need for a specific time for faculty to work together (Dufour, Dufour, Eaker & Many, 2006) and, based on faculty comments, monetary rewards help to legitimize the extra work involved with a
FLC. Therefore, in tight financial times, alternative funding should be pursued. Forming a committee to identify and write grant proposals to meet these financial needs is an option.

EKU’s CARTE project echoes the work of Garet and his colleagues (2001) which highlights the importance of faculty conversations, observations, and collaboration as central to the change process. “While there were varying levels of commitment and implementation for FLC members, overwhelmingly, faculty indicated they saw the benefit of, and desire for, collaboration across disciplines and that they will change their behaviors as a result of participation in the CARTE FLC,” (Combs et al., 2012, p. 4)

The Common Core State Standards identify the knowledge and skills needed for success in college and careers as agreed upon by education leaders across the United States (NGA Center & CCSSO, 2010a). Standards are not the curriculum nor do they define instructional methods, but they can provide a framework on which teachers – at any grade – can plan instruction to meet the needs and next steps for all of their students. Higher Education faculty must be part of this process, guiding their students forward and, when needed, providing their students support when they arrive in college with gaps.

*Today’s students and the future of our economy and our democracy depend on significant reforms both in K-12 education and higher education. Working together, schools and colleges can prepare students with the learning they need to meet new challenges and solve unscripted problems in every sphere of their lives—personal, economic, civic, democratic, global, and environmental. I am pleased to lend AAC&U’s voice to this growing coalition of educational leaders*
committed to twenty-first-century educational excellence. (Schneider, 2014, para. 2)
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Challenges Faced by Persons with Disabilities at their Workplaces in Pakistan

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Abstract

The present quantitative investigation reported on identifying difficulties and challenges being encountered by persons with physical disabilities at their workplaces. A self-constructed and validated questionnaire (Cronbach alpha: 0.861) was used to collect data from a sample of seventy (70) persons with disabilities (males = 40, females = 20) selected through snow ball sampling technique from public, private and self-employed organizations. The subjects of study were required to respond on three point criteria (yes, to some extent, no). Data were analysed by using SPSS. Descriptive statistics were used to explore, summarise and describe the data collected. T-test was used to see the difference between responses of males and females. Analysis of Variance (ANOVA) was run to see the difference in responses on the basis of demographic variables of socio-economic status (qualifications, professions, and locality) and type of workplace. Major findings revealed that persons with physical disabilities were facing problems in transportation, accessibility, discrimination and exploitation at work etc. Conclusions were drawn and recommendations were made.

Key words: Challenges, persons with physical disabilities, workplace
Design Framework of Gaming Materials to Cultivate Problem-solving Abilities: Differences and Commonalities within STEM Education

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ABSTRACT

The advancement of information and communication technology requires change in the purpose of school education from instilling a certain amount of knowledge to cultivating problem-solving abilities while collecting, analyzing, and utilizing necessary information. Many countries include problem-solving ability in their national competency standards, and PISA surveys by OECD, which affect school education policy in each country, have included a problem-solving test since PISA 2009. However, because the Japanese National Course of Studies specifies not competencies but contents, teachers tend to adopt a traditional instruction style, particularly at the secondary school level. In order to improve this situation, my team has developed gaming instructional materials for STEM education. According to Bruner’s (1993) suggestion, our materials intend to teach problem-solving frameworks as general strategies and utilization of ways of viewing and thinking as meta-cognitive skills. Each gaming material can be finished in a 50-minute class period. Therefore, it is important to design games focusing on learning activities related to the learning objectives of the specific subject area. However, on the other hand, it is also important to emphasize commonalities among various problem-solving activities in order to prompt students to utilize the same problem-solving framework consistently and flexibly in daily life. In Japan, every school has a “Period for Integrated Study” that aims to cultivate students’ problem-solving abilities based on a cross-curricular approach. However, it does not play the expected role because of teachers’ insufficient competencies and lack of appropriate support materials. In this paper, I develop a framework to explain the differences and commonalities of problem-solving activities within STEM education and the Period for Integrated Study. Moreover, based on the new framework, I discuss what e-learning materials for cultivating problem-solving ability in each subject area should focus on as their design principles so that they can facilitate the acquisition and practice of important core concepts and ways of viewing and thinking in the relevant subject.

Key Words: STEM education, problem-solving abilities, gaming instructional materials, ways of viewing and thinking, warp and woof of problem-solving processes.

INTRODUCTION

The advancement of information and communication technology requires change in the purpose of school education from instilling a certain amount of knowledge to cultivating problem-solving abilities while
collecting, analyzing, and utilizing necessary information. Many countries define that competency standards should be cultivated as 21st century skills (Partnership for 21st Century Skills 2009). Problem-solving ability and Information and Communication Technology (ICT) literacy are the core of these competencies. According to this change, PISA surveys by OECD, which affect school education policy in each country, have included a computer based problem-solving test since PISA 2012.

However, the Japanese National Course of Studies (NCoS) specifies not competencies but contents in order as the standard for checking and authorizing textbooks. Because these textbooks are used as guidelines in creating entrance examinations for upper secondary schools and universities, secondary school teachers tend to adopt a traditional instruction style in order to instill knowledge and skills in these textbooks. The Japanese teacher promotion system for secondary schools emphasizes not learning pedagogy but contents knowledge of each subject area. Therefore, many teachers do not know how to design and manage learner-centered activities, though problem-based learning and exploration learning have been introduced in mathematics and science, and a new subject area, Information Study, was set up to students’ cultivate problem-solving ability utilizing ICT. In addition, the Period for Integrated Study, set up not for teaching content knowledge but for cultivating problem-solving and self-learning abilities through a cross-curricular approach, is not playing its expected role.

To rectify this problem, my team developed gaming instructional materials for science, technology, engineering, and mathematics (STEM) education to cultivate learners’ problem-solving abilities. These materials are based on similar design frameworks (Matsuda et al. 2012, Matsuda & Ito 2014, Taguchi & Matsuda 2014, Katto et al. 2013). Figure 1 shows the frameworks for Information Study, which is a compulsory subject area of technology education at the upper secondary school level. This framework was developed by improving Hirabayashi and Matsuda (2011)’s framework that was the origin of other frameworks.

Figure 1: Matsuda’s (2014) design framework of the gaming instructional materials for Information Study.
Originally, this framework (Figure 1) 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 ways of viewing and thinking when using ICT in problem solving. The rectangles in the figure show five sub-processes for problem solving and one for reflection. Except for the Consensus Building process, the sub-processes for problem solving correspond to those of the design process students are required to learn, as per the technological literacy standards (International Technology Education Association; ITEA 2007). In each sub-process, students are required to utilize ways of viewing and thinking shown in the balloon appropriately. Matsuda (2014) explained that this framework is intended to teach domain-specific knowledge, ways of viewing and thinking, and problem-solving frameworks, according to Bruer’s (1993) statement that domain-specific knowledge, meta-cognitive skills, and general strategies are all elements of human intelligence and expert performance.

In addition, though the problem-solving processes explained in the NCoS guidebooks and textbooks are quite different among subject areas, our frameworks intend to make these differences as small as possible. The reason we do this is Bruer’s suggestion; if we want to teach higher-order skills, then the instruction should be informed. I consider that general strategies should not depend on but be common among topics, domains, and contexts in order to be transferred. However, because each of our gaming materials can supposedly be finished in a 50-minute class period, it is important to design a game that focuses on learning activity related to the learning objectives of the specific subject area. To this end, it is first necessary to summarize the differences and commonalities of problem-solving activities within STEM education.

**PURPOSE**

In this paper, I develop a framework to explain the differences and commonalities of problem-solving activities within STEM education. This framework also explains the problem-solving processes explained in NCoS guidebooks and textbooks of each subject area. Moreover, it can explain the differences between the role of Information Study, a compulsory subject area for ICT education, and the role of ICT use in the learning activities in other subject areas.

**SEVERAL DIFFERENT CONCEPTS OF PROBLEM SOLVING**

Problem solving is one of the core elements of the 21st century skills, and it needs to be cultivated in all subject areas. However, Matsuda and Masuda (2011) analyzed the problems for “Problem-based Learning (PBL)” in Mathematics published in the NCoS guidebook and textbooks authorized by MEXT and pointed out that these problems were not adequate for cultivating students’ ability to utilize learning outcomes in problem solving in everyday life. Taguchi and Matsuda (2014) pointed out a similar issue with “Exploration Activities (EA)” in Science. As different views of history affect how teachers teach history (Bransford et al. 1999), the different perspectives of textbook authors may be caused by different views of problem solving.

Table 1 shows several different problem-solving processes described in NCoS guidebooks or textbooks of mathematics, science, Information Study, and the Period for Integrated Study (MEXT 2009) as well as the design process defined in ITEA (2007) and problem-solving process assumed in PISA’s 2012 survey (OECD 2013). Moreover, Table 2 shows some example problems corresponding to each problem-solving process.
Table 1: Comparison among Problem-solving Processes of Several Subject Areas.

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<tbody>
<tr>
<td>-Goal setting</td>
<td>-Identifying and defining a problem</td>
<td>-Exploring and understanding</td>
<td>-Representing and formulating</td>
<td>-Finding a problem</td>
<td>-Finding / clarifying a problem</td>
<td>-Goal setting</td>
</tr>
<tr>
<td>-Technical understanding</td>
<td>-Generating ideas for a solution</td>
<td>-Planning and executing</td>
<td>-Forecasting</td>
<td>-Planning</td>
<td>-Analyzing the problem</td>
<td>-Analyzing / marshaling information</td>
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<tr>
<td>-Rational judgment</td>
<td>-Observing / experimenting</td>
<td>-Considering</td>
<td>-Examining the answer</td>
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<tr>
<td>-Derivation of optimized solution</td>
<td>-Generating ideas for a solution</td>
<td>-Performing</td>
<td>-Evaluation</td>
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<td>-Consensus building</td>
<td>-Reporting</td>
<td>-Reporting</td>
<td>-Presenting</td>
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<td>-Reviewing</td>
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Table 2: Examples of Problems in Each Subject Area Shown in Table 1.

<table>
<thead>
<tr>
<th>Our Framework (Information Study)</th>
<th>- Let’s design and create an effective presentation.</th>
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<tr>
<td>- Create an adequate security policy to manage the computer room in our school.</td>
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<tr>
<td>ITEA’s (2007) Technology Literacy Standard</td>
<td>- Let’s design a layout of the new regional airport near our school and see how our plan compares with that of the developers.</td>
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<tr>
<td>- Let’s help design an energy-efficient home for a family of four, considering all forms of energy, the costs of using energy-efficient designs, and how those costs might affect the home’s resale value.</td>
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<td>PISA 2012 (OECD)</td>
<td>- TRAFFIC: Maria wants to travel from Diamond to Einstein. The quickest route takes 31 minutes. Highlight this route.</td>
</tr>
<tr>
<td>- TICKETS: You plan to take four trips around the city on the subway today. You are a student, so you can use concession fares. Use the ticketing machine to find the cheapest ticket and press BUY.</td>
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<tr>
<td>PBL in Mathematics</td>
<td>- Let’s find the golden ratio in an equilateral pentagon and the isosceles triangles of which the vertex angle is 36 degrees.</td>
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<td>- Let’s determine the price to get the maximum income when the amount of food sold decreases at a fixed rate according to its price.</td>
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<tr>
<td>EA in Science</td>
<td>- Let’s measure the value of acceleration due to gravity by using a record timer.</td>
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<td>- Let’s measure the specific heat of copper by using the law “The quantity of heat lost from a hot body is equivalent to quantity of heat given to a cold body.”</td>
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<tr>
<td>- For the gas of marketing included in a cylinder, I calculate the molecular weight by measuring volume, mass, and temperature.</td>
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<tr>
<td>Period for Integrated Study</td>
<td>- Let’s make a proposal to stimulate the shopping street of the region.</td>
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<tr>
<td>- Let’s find work that is attractive and suitable for me and worth continuing throughout my life.</td>
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<td>- Let’s hold an environmental festival as earth-citizens.</td>
<td></td>
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</tbody>
</table>

Every problem in Table 2 satisfies the property of problem solving in PISA 2012; the method of finding a solution is not immediately obvious. However, according to a comparison among the problems in Table 2, they can be classified into two groups based on whether they have each specific correct answer or not. This classification is similar to well-defined or ill-defined (Mayer & Wittrock 2006). Problems of PBL in
Mathematics, EA in Science, and PISA 2012 belong to the former. This type of problems gives learners an occasion to experience a similar process to someone who has already solved it. Therefore, if the answers to the problems are published somewhere, students can search for them. The latter type includes problems of our framework, ITEA, Information Study, and the Period of Integrated Study. Whether a solution to these problems is superior or inferior to other solutions depends on the definition of a better solution. There is ambiguity in the interpretation of objectives, constraints, and correlations of the variables that constitute a problem. Therefore, a difference between these two types of problems is caused by whether they require clarification/interpretation/formulation of problem situations by oneself or not. According to a possibility of different formulations on one’s own, the validity of a solution depends on not only the validity of the problem-solving procedure and reasoning but also the validity of the formulation of the problem.

In addition, although it is not apparent in Tables 1 and 2, another important classification of problem types is whether they have a time restriction in their conditions or not. Because problems in daily life always have time restrictions, if students do not pay attention to this condition, the problems cannot simulate a real problem situation, and the efficiency of the acquired problem-solving methods may change. For example, if a problem has a specific correct answer but also has a time restriction, like on an entrance examination, students will take different problem-solving approaches and perceive a different level of difficulty from the same problem that has no time restriction. Problems of test and daily life have difference in their conditions whether people can use tools and information resources useful to solve them. Because test problems do not admit utilization of tools and information resources, the amount of knowledge contributes to raise the efficiency of problem-solving performance. Although cultivating problem-solving ability has been important for a long time ago, in modern society, it is more important to utilize ICT appropriately instead of a certain amount of knowledge in order to collect information and raise the efficiency and quality of problem solving.

Concerning ICT use, it is important whether a series of activities, “collecting → processing → summarizing” information, is paid attention. The problem-solving process of the Period for Integrated Study in Table 1 emphasizes these activities. In addition, the problem-solving process of EA in science also supposes similar activities in “Observing / experiment → Marshaling / considering → Reporting & presenting,” although it is better to utilize ICT for finding data collected by another person than to conduct observations or experiments by oneself with considering the efficiency of the problem-solving activity. PBL in mathematics does not pay attention to “collecting and analyzing information,” as only “reporting” is included in the process. On the other hand, Matsuda’s (2014) framework includes these activities, such as the first tasks in the Goal-setting process and the Technical understanding process, “collect information or get an advice from a reliable person when it is not sure whether own judgment is correct or not” stated in rational judgment knowledge utilized in the Rational judgment process. However, the problem-solving process of Information Study does not necessarily include these activities. PISA survey classified problem situations into Interactive and Static, and the latter requires exploration of the situation to uncover additional relevant information.

INTEGRATED FRAMEWORK OF SEVERAL TYPES OF PROBLEM SOLVING

Our Problem-solving Frameworks for Mathematics and Science

Our framework (Figure 1) was constructed by integrating Tamada and Matsuda’s method for cyber ethics judgment into Matsuda’s method for positive use of ICT. The latter is mainly considered in the Technical Understanding process and emphasizes divergent thinking in order to generate alternative solutions. The former is performed in the Rational Judgment process and emphasizes convergent thinking in order to examine each alternative critically. MEXT (2000) categorized the objectives of informatics education into the following three
groups: (1) ability to utilize ICT for problem solving, (2) scientific understanding of ICT, and (3) students’ attitudes as members of the information age. Note that (2) and (3) are related to the Technical Understanding process and the Rational Judgment process, respectively. In addition, in each process, “collecting → processing → summarizing information” is performed, as mentioned previously, and (1) is achieved by prompting students to consider utilizing ICT in order to improve the efficiency of their problem-solving activities.

Because it is possible in problem solving of daily life to compensate the amount of knowledge and the time/effort of performing experiment/observation with collecting information, ability to utilize ICT for problem solving, mentioned above, and ability of thinking and judging for summarizing collected information and interpreting the result. The reason why informatics education has become important is concerned with this point, and then education to cultivate problem-solving ability needs to promote students to consider goodness of methods to find a solution. Regarding this point, PBL in Mathematics and EA in Science are the same.

Therefore, I consider that problem-solving activities of PBL in Mathematics and EA in Science should be performed according to Figure 1, as a general strategy. Our team developed e-learning gaming materials for these activities based on Figure 1 by choosing the following topics instead of problems shown in Table 1: “Which is more profitable: getting employed immediately after graduating from upper secondary school or after graduating from university?” (Ito & Matsuda 2014), “Let’s make a plan to manage a booth at a school carnival” (Matsuda & Ito 2014), and “Let’s examine an earthquake disaster that will happen in a specific district” (Taguchi & Matsuda 2013). These topics are familiar to upper secondary students, and the problem situations are purposefully ill-defined so that they offer the possibility of various formulizations.

These e-learning materials help students to formulize problems by transforming them from various viewpoints utilizing mathematical and scientific ways of viewing and thinking. To this end, a chart like Figure 3 is shown. In order to formulize a problem in daily life mathematically, first, it is important to transform it variously in the real world. For example, in order to consider “Which is more profitable: getting employed immediately after graduating from upper secondary school or after graduating from university?” students are asked to list various values/merits corresponding to “profit.” This method is based on Matsuda’s (1993) proposal of the mathematical ways of viewing and thinking that considered mathematical problem solving is performed by applying a series of transformation of mathematical ways of viewing and thinking, as in Figure 4. This task is started up by a following informatic and systematic ways of viewing and thinking shown in the balloon of the Goal Setting process in Figure 1, “Considering various benefits.” In this example, while paying attention to quantification, students are prompted to transform “profit” into “become richer” or “superior job choices” by means of specialization. Moreover, “become richer” is further specialized into “more income” or “more savings,” and finally, students are prompted to connect these ideas to any quantitative data, which they should find in real problem-solving activities but are given in the e-learning material. Furthermore, in the e-learning material, the data include only a limited age range, such as from 24 to 40, and then students are required to extrapolate other age range, such as from 18 to 23 or 41 to 60, by applying any function approximately. Finally, they are required to transfer the experience of the “become richer” case to the “superior job choices” case by means of analogy.

When my team conducted the trial lesson that used the above-mentioned e-learning material for mathematics, 70% of the students answered, “It is difficult to solve this problem mathematically” in the pre-questionnaire. However, after the lesson, 80% of them answered, “Mathematical functions are useful to explain a familiar phenomenon” in the post-questionnaire. Moreover, more than 80% of the students answered, “Mathematics is useful and helpful in my real life (if this problem can be solved mathematically)” in the post (and pre-) questionnaire.
Our e-learning materials ask students to utilize information based on an informatics and systematic way of viewing and thinking, “considering varied information useful to solve a problem anytime,” not only in Information Study but PBL in mathematics and EA in science. Although the NCoS Guidebook of Science recommends that students to carry out observations or experiments in order to collect data by themselves, it is hard to expect them to carry out data collection on their own in daily life if they must purchase an experimental device and it is too expensive or never to be reused. This assumption may make students feel useless in learning science for daily life. Our e-learning materials emphasize the utilization of free-access data that anyone collects and publishes. However, when utilizing data, it is necessary to evaluate the reliability. To this end, students need to formulate a hypothesis, examine an experimental condition, and consider what kind of data should be collected. If these examinations are conducted and no adequate data can be found, people need to consider whether they should perform a new experiment/observation. I argue that students need to perform EA in science by means of not only informatics and systematic but also scientific ways of viewing and thinking.
simultaneously.

Before formulating a hypothesis and collecting the required data, it is necessary to understand a problem clearly from several viewpoints. To this end, our e-learning materials utilize a “transformation” chart like Figure 3 in order to express problem situations by using scientific concepts and terms. Here, it is useful to apply mathematical ways of viewing and thinking, such as “specialization,” “quantification,” and “analogy.” It is important to solve problems in daily life to utilize all learning outcomes without considering to which subject area each problem belongs.

On the other hand, in order to develop a new e-learning material for a specific subject area, knowledge and ways of viewing and thinking utilized in the material should focus on that subject area by controlling explanations, clues, and choices in the dialogue. In the following section, I will discuss this point.

**Warp and Woof of Problem-solving Processes**

The problem-solving process of Figure 1 consists of the processes of “Goal setting → Technical understanding ←→ Rational judgment → Derivation of optimized solution → Consensus building → Review.” In each of the main processes, activities to “collect → process → summarize” information are performed simultaneously. In this research, I call the former and the latter processes the warp and woof of problem solving, respectively. The problem-solving process of the Period for Integrated Study in Table 1 focuses on the woof of problem solving and is interpreted as the repetition of woof activities. However, because the purposes of woof in each warp process should differ from each other, useless circularity may occur if the difference of purposes is not clearly paid attention to. I summarize the above discussion in Figure 4.

![Figure 4: Warp and woof of problem-solving processes.](image-url)
understand that the first task, “Perceive information in order to understand and analyze the goal and the conditions of the problem,” corresponds to “collect” information activities and the second task, “Determine sub-goals and a work plan,” corresponds to “process → summarize” information activities. Matsuda (2003) stated that people need to consider not only the goodness of the solution but also the goodness of the method used for creating the solution when “considering various benefits,” because ICT should be utilized for improving the latter. The purpose of the first task in this process is to clarify the goodness and conditions of the solution while collecting information. On the other hand, the purpose of the second task is to make a plan for finding a better solution. In our e-learning material for Information Study, a timer function is used to terminate a problem-solving activity and judge the mission as failed. Moreover, in a collaborative situation, if students do not collect information about the group members’ dates of availability, trouble might occur. Therefore, each of these tasks requires woof activities.

In the Technical Understanding process, students generate varied alternative solutions while searching and understanding a new technology. Because the advancement of ICT is rapid and knowledge taught in schools is limited, people should carry out problem solving while acquiring new knowledge. This is the reason the process was called “Technical Understanding.” However, in order to emphasize similarities among the problem solving of Information Study, mathematics, and science, it is appropriate to call it the “Generate Alternatives” process to emphasize the main purpose.

Focusing on the two processes so far, I will discuss the device for designing e-learning materials corresponding to each subject area. However, before that, I notice Takahashi’s (1984) suggestion that both external and internal knowledge are utilized in a problem-solving process. Internal knowledge may mean domain-specific knowledge. Although the woof activities mentioned above seems to focus on the utilization of external knowledge, internal knowledge plays important roles, such as keywords and ideas for searching external knowledge and for analyzing problem situations by transformation as in Figure 2. Engineering problem solving aims to improve the efficiency of tasks, and then it is important to accumulate the outcomes as internal knowledge in order to use them as feedforward information for ensuring neither failure nor back track. The domain-specific knowledge I mention here is not knowledge peculiar to a specific problem but knowledge (core concepts) that can be used for general purposes in the domain. Moreover, it is necessary to be learned in connection to utilization of the ways of viewing and thinking in each subject area. Therefore, it is necessary to arrange the important core concepts into each subject area, such as mathematics, science, and Information Study, and to design e-learning materials in which problem-solving activities focus on learning and utilizing specific concepts and ways of viewing and thinking.

As a design principle, firstly, because in problem solving of mathematics and science, it is necessary to cultivate students’ ability to formulize a problem in daily life mathematically and scientifically, it is therefore important to prompt students to transform an ill-defined problem into a relationship among mathematical and scientific core concepts using a chart like Figure 3. This means that the first task of the Goal Setting process should be emphasized. In order to help the activity of this task, the following knowledge should be taught as domain-specific knowledge: useful methods of quantification, scientific laws that represent transformation between measures, websites that release useful data for examining several problems scientifically, and so on. On the other hand, in the problem solving in Information Study, the second task of the process should be emphasized more while considering the utilization of ICT. However, a typical mistake that students tend to make here is to pay attention to not the second task but to the first. Therefore, problems for Information Study should be set their situations such that students should consider the first task but need to pay more attention to the second task. Here, they should learn various good points concerning the method of problem solving, trade-off relationship among them, and ideas and viewpoints for conquering the trade-off relationship as transferable domain-specific knowledge. Of course, it is important in the problem solving of mathematics and
science to have a work plan. However, it is important to consider the following devices for efficiency: whether to find the expected data by utilizing ICT or to collect data by carrying out experiments/observations, whether to search more until the expected data is obtained or to interpolate data mathematically evaluating its effect as the result. These judgments on whether to use ICT or not are more appropriate for the woof activities of the Generate Alternatives process than in the second task of the Goal Setting process.

Secondly, as discussed above, use of ICT is considered at two levels: as alternatives in the Generate Alternatives process and devices in the woof activities in each process. The latter corresponds to the first objective of informatics education in Japan, the “ability to utilize ICT for problem solving,” which is expected to be cultivated mainly, not in Information Study, but in each existing subject area. In the case of mathematics, as mentioned above, students must consider not only whether to search for more data on websites or interpolate the existing data mathematically but also whether to interpolate by manual calculation or using spreadsheet software. In problem solving of Information Study, it is desirable to select a problem that requires discussion about the utilization of new ICT and its social influence, in order to cultivate the second and the third objectives of informatics education in Japan, “scientific understanding of ICT” and “students’ attitudes as members of the information age.”. Here, it is necessary to investigate and understand both the merits and demerits of the new ICT and to coordinate the Generate Alternatives process and the Rational Judgment process.

Thirdly, the relationship between problems for mathematics and science and important activities in the Generate Alternatives process is considered as follows. In science, as in Information Study, it is desirable to select a problem that requires scientific discussion about the utilization of a new ICT and its social influence and risk. Our e-learning material “Let’s examine an earthquake disaster that will happen in a specific district” corresponds to this type. On the other hand, problems in daily life, such as “Let’s reduce the amount of garbage we discard,” can be also adopted. As a problem between these two types, there is the “reduction of medical expenses by use of generic drugs,” that requires each person to judge whether the reduction of medical expenses is superior to the risk of side effects based on scientific reasoning. In order to carry out such risk and trade-off assessment, quantitative analysis is effective and it is better for any person to be able to utilize mathematical methods for this end. Therefore, in problem solving of mathematics, students should master “methods for analyzing collected data by using ways of viewing and thinking, such as functional, statistical, and differential.” However, in order to focus on activities that are important for each subject area according to time limitation, problem solving in science should emphasize logical judgment on the reliability and validity of data based on science, and topics of problem solving in mathematics should be chosen from daily life, not concerning with science and technology like our e-learning materials. Moreover, in mathematics, it is better not to study and use advanced mathematical techniques but to utilize basic methods, such as approximation, statistical analysis, and simulation, along with ICT tools and mathematical ways of viewing and thinking.

Based on the above discussion, activities in the Rational Judgment process should focus on the following in each subject area, respectively. In Information Study, they should focus on critical thinking based on Tamada’s knowledge of rational judgment. In science, they should focus on examinations of the influence of disregarded factors and interaction of two or more factors for reliability and validity of the data. Finally, in mathematics, they should focus on quantitative evaluations of errors and robustness according to changes of assumption.

FUTURE DIRECTIONS

In this paper, I discussed differences among the frameworks of problem-solving activities in various subject areas and pointed out difference in the meanings of problem-solving abilities. In addition, I proposed that the problem-solving frameworks in each subject area should not be independent of each other but need to be
integrated as the general strategy that is an element of human intelligence and expert performance. For this end, I proposed the a problem-solving process consists of two activities, warp and woof, based on our research on the design frameworks of e-learning materials for cultivating problem-solving ability in each subject area. Finally, based on the new framework, I discussed what e-learning materials for cultivating problem-solving ability in each subject areas should focus on as the design principles so that they can facilitate students’ acquisition and practice of important core concepts and ways of viewing and thinking in the relevant subject.

In future work, I need to improve and provide more detail of our design frameworks of e-learning materials for each subject area based on the discussion in this paper. In addition, I plan to improve the e-learning materials and compare the effects with the conventional ones. Moreover, not only e-learning materials for specific subject areas developed so far but also those intended to promote the utilization of learning outcomes in all subject areas synthetically are expected to be developed.

ACKNOWLEDGEMENTS

This research was supported by JSPS KAKENHI Grant Numbers 26350313 and 24501208 and the foundation for the Fusion of Science and Technology (FOST).

REFERENCES


Title of Submission: Mathematics Resources in Grade 8 Classrooms

Topic Area of Submission: Mathematics Education

Format of Presentation: Poster Session

Description of Presentation:
This paper captures the grade 8 teachers’ and implementation teams’ perspectives of specific types of mathematics resources. Through professional learning sessions, self-assessment surveys, and individual interviews, various print and online resources were introduced, explored, assessed, and discussed. Overall, teachers reported both perceived benefits and challenges to specific print and online resources, and concluded that a wide variety of materials is required for successful mathematics programs.

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Abstract

This paper attempts to capture the grade 8 teachers’ and implementation teams’ perspectives of specific types of mathematics resources. Through professional learning sessions, teachers and implementation teams explored and assessed various print and online resources. The self-assessment surveys and individual interviews provided rich information regarding the teachers’ and implementation teams’ selections and uses of mathematics resources. Overall, teachers reported perceived benefits and challenges for print and online resources, and concluded that a wide variety of materials is required for successful mathematics programs.

Keywords: elementary school, mathematics education, mathematics resources, teacher education

Research Objectives

Selecting and Implementing Resources

Given the vast amounts of existing resources and the continually expanding amounts of new materials made available, selecting appropriate resources for their mathematics programs is an essential skill for teachers (Houssart, 2001). The uses of a variety of resources are encouraged, as students learn mathematics uniquely- in different ways, through different resources, and with varying time frames (Ontario Mathematics Curriculum, rev. 2005). Recognizing the importance of resources, “the [Ontario] Ministry of Education has produced or
supported the production of a variety of resource documents that teachers may find helpful as they plan programs based on the expectations outlined in [the] curriculum document” (Ontario Mathematics Curriculum, rev. 2005, p. 24). Aside from resources for teaching mathematics, the National Council of Teachers of Mathematics also suggested that teachers be granted copious opportunities and resources for the increasing and reviewing of their mathematical knowledge (NCTM, 2000). This was recommended, as teachers’ mathematical knowledge is deeply reflected in the ways in which they interact, explore, and guide the uses of mathematics tasks and resources in classrooms (NCTM, 2000).

**Print and Online Resources**

Print resources, such as textbooks, can be influential in the classrooms, as they may emphasize the organization and the content of the mathematics lessons (Schmidt, Houang, & Cogan, 2002; Tarr et al., 2006). Textbooks differ greatly in their effectiveness in organizing and emphasizing big mathematical ideas (NCTM, 2014). As such, teachers need to draw upon their content and pedagogical knowledge to identify textbooks that are stellar in connecting amongst mathematics topics. As print resources can sometimes be costly, the ability to identify high quality materials may greatly impact the ways in which limited budget is spent (Houssart, 2001).

Trgalova and Jahn (2013) noted that “teachers often find themselves unable to choose from among [resources] that would be the most relevant to their educational goal and to the context of their classes” (p. 973). At the same time, with the ever-increasing availability of online resources, the ability to identify and distinguish excellent items becomes all the more necessary (Trgalova & Jahn, 2013). Many web-based resources are highly valuable in supporting the teaching and learning of mathematics (NCTM, 2014). Online resources also include synchronous and asynchronous communication tools, which have the potentials to extend
students’ learning from within the classrooms to beyond the classrooms (Glazer, 2004).

**Collaborative Teacher Inquiry Project**

The Collaborative Teacher Inquiry Project (2012-2014) was a partnership between 16 elementary schools and the University. Eight schools participated in the first year of the project, while 14 schools (six returning and eight additional) were involved in the second year. Within each school, the principal or vice-principal, along with the grade 8 teachers of mathematics, formed a mathematics implementation team. The main goals of this project included: 1) the improvement of grade 8 mathematics teaching and learning, through linking research with practice, and 2) the investigation of collaborative inquiry as a professional development approach.

Through professional learning sessions, teachers and implementation teams explored various print and online resources. The self-assessment surveys and individual interviews provided rich information regarding the teachers’ and implementation teams’ selections and uses of mathematics resources. This paper attempts to capture the teachers’ and implementation teams’ perspectives of specific types of resources. We aim to address the following questions:

1. What mathematics resources are used by our implementation teams for grade 8 mathematics programs?
2. How are these mathematics resources used by our implementation teams?
3. What are some of the perceived benefits and challenges of the identified resources?

**Method**

**Professional Learning Sessions**

During each academic year, four professional learning days took place at the University, and the teams had opportunities to discuss and exchange insights regarding the improvement of
mathematics instructional practices. The Ten Dimensions of Mathematics Education framework was introduced on the first professional learning day. This conceptual framework highlighted and organized the essential components of successful mathematics programs (McDougall, 2004; Ross et al., 2003). Through discussions, each implementation team selected two of the dimensions as the focus of their school. The remaining professional learning days were planned based on the needs of the grade 8 teams. Sessions on assessment, student mathematics communication, student engagement, student tasks, and technology were given.

**Attitudes and Practice for Teaching Mathematics Survey**

The Attitudes and Practice for Teaching Mathematics Survey consists of 20 Likert (agree-disagree) items, and has previously been used in a number of other mathematics reform studies. A self-assessment survey organized in accordance to the Ten Dimensions of Mathematics Education, each item measures the participant's alignment of beliefs with the current mathematics education trends (McDougall, 2004; Ross et al., 2003). A high score on a dimension suggests that the teacher's attitudes and practices are closely aligned with current mathematics education trends. Likewise, a low score on a dimension suggests that the teacher's attitudes and practices are less aligned with current mathematics education trends.

The survey was administered to all participants during the first professional learning day. After the completion of the survey, participants were given time to reflect upon the results and select two dimensions as areas for personal growth.

**Interviews**

Individual structured interviews, consisting of 30 questions that prompted participants to describe their learning environments, visions of successes, challenging circumstances, and goals in mathematics, were conducted following the first professional learning day. These interviews
provided rich descriptions of administrators' and teachers' visions of mathematics improvements within their schools. Each interview was approximately 45 minutes in length, and were audiotaped and transcribed by the University team.

Findings

Textbooks

One form of resource amongst many

As teachers described their uses of textbooks in mathematics programs, a common theme of thoughtful selections, combinations, and modifications emerged. “I can't pull [materials] from one textbook, I pull from many”, explained one teacher from Epsilon School (T2, Epsilon School, Interview). In order to select appropriate portions from the textbooks, great understanding of students' strengths and areas of improvement serve as the pre-requisite. Since each student is unique in his or her strengths and weaknesses, “there is not really a textbook, per se, out there that is suitable for all types of learners” (T2, Epsilon School, Interview). Some challenges with textbooks included the uses of language that is too advanced for learners and too difficult for students with special abilities (T2, Epsilon School, Interview). She explained, “Because some of these textbooks are loaded with language and language and language. And it is a little overwhelming for some of these kids” (T2, Epsilon School, Interview). As such, the combination of different textbooks and different resources was suggested as a solution.

Likewise, a teacher from Alpha School wanted to show students that “the textbook is not the only mathematical resource here” (T2, Alpha School, Interview). Though textbooks were used in mathematics instruction, students were encouraged to practice problem solving approaches and explore mathematics software (e.g. Geometer's Sketchpad) during the first month of school. As students were accustomed to a reliance on textbooks in previous mathematics
programs, this transition caused some temporary unease amongst students and their parents. “I think they were a bit scared. I think a lot of their doubts came from being a bit scared and not having that textbook, sort of like a security blanket. It seems to be a go to for them, the textbook”, the teacher reflected (T2, Alpha School, Interview).

**Perceived benefits**

A teacher from Beta School described her experiences in recent mathematics workshops: “We bought math textbooks and in a year or so, all the workshops that we have attended say: 'You don't need textbooks, they are bad. You go away from textbooks.' Why then? We bought them, what is so bad about them?” (T1, Beta School, Interview). Textbooks are often thought of as important contributors to mathematics programs (T4, Delta School, Interview; T3, Omega School, Interview). The messages from some administrators or some professional development sessions with regards to the discarding of textbooks may cause additional tensions. While a teacher believed that “interactive thinking and hands-on experiences” are important to students' mathematical successes, she also emphasized that textbooks can be useful during times when lessons required teachers to “stand up and teach” (T1, Beta School, Interview). Perhaps, a balanced mathematics program may require both inquiry experiences and instructional experiences.

The teachers at Omega School found that old textbooks contained a lot of exceptional rich tasks. Yet, the teachers stressed the importance of putting in the time and thought in perusing through the resources:

We use a variety of resources...Most of mine are [resources written by] Marian Small. Flipping through old textbooks, looking for richer culminating kind of things and pulling them out and using them. There are some of them that have been okay. (T3, Omega School, Interview)
While textbooks were most commonly used in classroom instruction, a teacher from Delta School has been using them slightly differently. Instead, textbooks were assigned as additional practices to be completed at home. He described:

The textbook I send home and I told the kids just to keep them at home. I told parents that I will assign homework from time to time, but the answers are at the back of the book. So if the students work on the homework, they can check the answers after they are done. And if you feel like you want to give them more questions, go for it. I leave it up to the parents. (T2, Delta School, Interview)

**Perceived challenges**

Since textbooks are constantly being updated and improved, new textbooks needed to be purchased periodically. At Gamma School, the budget restriction, along with the cost of some mathematics resource books (one resource book was almost $600), meant that only one copy of each resource was purchased (T2, Gamma School, Interview; T4, Gamma School, Interview). As a result, teachers had to coordinate, take turns, and share each resource (T3, Gamma School, Interview).

While many teachers embraced new textbooks and new resources, some teachers wanted to continue using old textbooks and resources. The principal at Epsilon School noticed the resistance to change amongst some teachers in her school:

Textbooks. Getting rid of old textbooks, and I am talking about textbooks that will span back to the 70s or mid 80s. We had to weed through our textbooks last year, and that has caused a bit of anxiety for a couple of teachers in regards to their form of program delivery that they have used over the years. I think that is the hardest piece. With their comfort level, now that I think about it. It is that. (P, Epsilon School, Interview)

**Summary**

Many teachers agree that textbooks should serve as one of many resources available for mathematics instruction. A teacher emphasized the importance of balance between inquiry-based
learning and instructional-focused learning (T4, Delta School, Interview). According to his opinion, a good textbook “does not have to include a series of math question sheets. It has to be something richer. Even people who are more cutting edge or try different things still use the textbooks. It is not worthless” (T4, Delta School, Interview). At the same time, there is danger in making textbooks the only resource. He continued: “But [the textbook] cannot be the focus of your math instruction” (T4, Delta School, Interview).

**Print Resources**

*Variety of resources and uses*

Some of the print resources used by grade 8 teachers included: math exemplars from the Ontario ministry of education, Gap Closing Analysis documents, Math that Matters resource book, The Literacy and Numeracy Secretariat documents, and TIPS resources. At Epsilon School, the principal prepared each teacher with a binder containing many of the listed print resources (P, Epsilon School, Interview). The math exemplars from the Ontario ministry of education are good in providing concrete ideas of the differences in achievement levels. Teachers felt that this resource helped guide the alignment of their personal expectations with the provincial expectations. At Sigma School, Gap Closing Analysis documents were used to assist the 40 students who participated in their weekly after school numeracy program (T1, Sigma School, Interview). A teacher commented that Math that Matters was used to connect mathematics with social justice issues (T5, Alpha School, Interview).

*Integration with technology*

In particular, a teacher mentioned the Leaps and Bounds resource, which combines print resources with the uses of technology. She described the usefulness of this resource for mathematics learners of various abilities:
We have this Leaps and Bounds resource. What's good about it, it is not that it is a book but it has Promethean Board lessons...I conducted this lesson with the [mathematics] coach based on this resource. Trying new resources, trying to see what else is out there. Leaps and Bounds resource is mostly for, I would say, everybody. For students who are struggling, it is even better because it's kind of going from simple to complex. That makes them be more comfortable. (T1, Beta School, Interview)

**Print resources and assessment**

During the second year of our project, the Ontario Numeracy Assessment Package (ONAP) diagnostic resource was introduced in one of the professional learning sessions at the University. Through collaborative explorations and discussions, and subsequent implementations in grade 8 classrooms, the teachers described some of ONAP's benefits. After using the ONAP, a teacher said she “saw where [her] students were, and tried to use those sorts of assessment to gage where [her] students were provincially” (T5, Alpha School, Interview). The ONAP diagnostic resource also showed “an area (e.g. communication) that students were lacking” (T6, Alpha School, Interview). In summary, the benefits of ONAP diagnostic resource included: 1) the display of students' mathematical knowledge from previous years, 2) the identification of starting points for students, and 3) the determination of students' misunderstandings of specific content strands.

On the other hand, teachers also noted some limitations of the ONAP resource. As it contained very detailed and lengthy components, some teachers felt that the implementation of the resource in its entirety would be too time consuming. Like the uses of textbooks, teachers felt that careful selections of suitable portions of the resource would be more beneficial to students' needs.

**Perceived challenges**

With print resources, locating and organizing them can be very time consuming. One
teacher suggested that an allocation of time during the school day “where teachers can meet to discuss” would be greatly effective (T1, Sigma School, Interview). The mathematics implementation team at Alpha School were “always sharing information” (T4, Alpha School, Interview). One teacher self-identified herself as “the resource person”, with “cupboards and cupboards full of resources [from] over the years” (T4, Alpha School, Interview). When other teachers approach her with specific topics, she would recommend information and resources in hopes of “constantly supporting each other” (T4, Alpha School, Interview). In addition, the administration at Alpha School assisted the teachers in creating a math room, where manipulatives and resources were organized and stored. That way, it lessened the likelihood of teachers not knowing what was available, and resources not “being used effectively” (P, Alpha School, Interview).

**Online Resources**

*Uses within mathematics classes*

“There has been a huge infusion of technology into the school in the last three years...” recounted the principal from Omega School (P, Omega School, Interview). This occurrence was also noticed at Beta School, where Promethium Boards and two carts of laptops were purchased in recent years (T1, Beta School, Interview). With these additional equipment, the teachers at Beta School explored more new ways of incorporating technology and online resources into their mathematics programs. For one teacher, the uses of online resources in the classroom involved interactive websites and online math games:

> We do have a lot of math websites that we use in the classroom and tell our students to try at home. Such as the Khan Academy. We did have a lot of interactive websites such as Sumdog, where they would do math games, competitions. And a lot of that reinforces some computational skills and some concepts that kids may need to practice. (T3, Beta School, Interview)
Likewise, the teachers at Gamma School incorporated numerous online resources into their mathematics programs. Some of these resources used include Khan Academy, Math Playground, and Sumdog (T4, Gamma School, Interview). One teacher used Math Playground when teaching the unit of fractions. When reflecting upon her students' learning experience through this online resource, she replied: “It is making math fun, if that is a possibility” (T4, Gamma School, Interview). For competition-based math games websites, such as Sumdog and Math Playground, students within class, between classes, and between schools can play against one another and have friendly competitions (T1, Gamma School, Interview).

*Uses outside mathematics classes*

While online resources were used within mathematics classes, teachers also noted their contributions to mathematics remedial and mathematics enrichment programs. The Khan Academy was mentioned several times as one useful online resource for students. In describing her efforts to assist students who were struggling with mathematics concepts, a teacher responded: “I need to spend time with that child one-on-one in class, or I ask them to stay after school, or I give them additional websites like Khan [Academy], [so] they can practice at home” (T4, Theta School, Interview). She believed that websites such as Khan Academy review mathematics concepts, while “moving away from rote work” (T4, Theta School, Interview). The principal at Theta School supported the uses of online resources for remedial and enrichments. “There's so much out there, be it the Khan Academy,” he explains. “Some teachers [in my school] use that. It's really a tool in terms of supplementing your program” (P, Theta School, Interview). Likewise, the principal at Beta School also acknowledged the value of mathematics websites for student learning, both at school and at home. “We encourage the use of websites
like Khan Academy, where you want to learn a particular concept, you log on to that. We try to promote that through technology so kids can log on from home” (P, Beta School, Interview).

At Sigma School, after-school mathematics remedial sessions were offered through a numeracy program organized by a grade 8 teacher. Attended by students who were struggling with mathematics concepts, websites such as World Education Games were introduced and practiced. Through this program, the students also participated in Worlds Maths Day (T4, Sigma School, Interview). Some online resources also provide tutoring. A teacher informed her students of these aids:

I posted websites where there are online tutoring sessions that they can go to. If they have questions, they can ask somebody online. (T3, Alpha School, Interview)

Perceived benefits

In some schools, online resources were found to be useful in engaging parents with their children’s mathematics learning progresses. A variety of mathematics websites were recommended to parents during teacher-parent interviews, and parents could use those resources to reinforce their children’s mathematics knowledge at home (P, Gamma School, Interview). Recently, the teachers at Beta School created a webpage for each class. On them, school-wide activities (e.g. Arts Night, Chinese New Year Celebration, School Spirit Days), lesson topics, and interactive mathematics websites were posted and regularly updated (T4, Beta School, Interview). Compared to occasional phone calls, having webpages for parents to access allowed for more frequent updates. A teacher listed some of these benefits:

Up until recently, it was mostly phone calls. It was trying to reach parents at the time when they would be able to talk, two to three times a year for reporting periods. Now because of our school websites, a lot of the information is being delivered in more timely fashion, and it is posted there so that parents can peruse at their own disposal. (T3, Beta School, Interview)
Discussion

From the principals and teachers interviews, it is evident the schools in the Collaborative Teacher Inquiry Project used a great variety of resources to support their mathematics programs. The availabilities and uses of teaching resources were described frequently during interviews- an indication that this component may play an important role in the teaching and learning of mathematics. With regards to textbooks, many teachers acknowledged their usefulness in classrooms, yet warned of over-reliances on one resource. A balance of textbooks with a variety of resources was recommended. Gap Closing Analysis documents, Leaps and Bounds resources, and TIPS resources were some of the useful print resources identified by teachers.

Khan Academy, Math Playground, Sumdog, and World Education Games were used in mathematics classes, numeracy programs, and mathematics remedial programs. These resources were also introduced and recommended to students and parents, with encouragements to review and enrich mathematics learning at home. The uses of class webpages described by the teacher participants reflect a similar trend noted by NCTM (2014), in that we have “a virtual opening of the classroom door to allow for collaboration among classrooms and teachers” (p. 80). It continues to suggest that “teachers can organize shared pages to enhance communication with their students and their students’ parents and caregivers” (NCTM, 2014, p. 80).

A teacher summarized her approach to the various available mathematics resources, illustrating the uses of multiple complementary sources:

I use the [Ontario] curriculum [document] as my base and I ensure that I have all my [mathematics content] strands laid out. Then I team-teach with other teachers. We make sure that we teach the same concepts at the same time...Through the Ontario curriculum, there's a link...It has all of the grade 8 [mathematics content] strands outlined, with activities and lessons that I kind of use as a model and structure. Then I use the textbook actually. I do use it quite a bit because I do like
some of the hands-on minds-on activities that the textbook has. So I kind of grab resources from everywhere, which is also a bit crazy making as well... (T4, Theta School, Interview)

**Impact of the Project**

Through the Collaborative Teacher Inquiry Project, the teachers and implementation teams identified, described, and shared resources that they found useful for their mathematics programs. New resources (print and online) were introduced by the University team during professional learning sessions. In addition, a wikispace was created and maintained, giving teachers and implementation teams additional opportunities to share resources and implementation suggestions.

**References**


Improving the Confidence and Competence of Mathematics Pre-service Teachers at a Regional University in Australia

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Abstract: The number of students studying science and mathematics at the secondary and tertiary levels of education in Australia has been in steady decline for many years. A number of major research projects have been funded in an attempt to address this decline by identifying strategies that will improve the experience and engagement of students studying mathematics and science in primary and the early years of secondary education. This paper reports on a multi-institutional project focused on improving the mathematical thinking of pre-service teachers and changing mathematics teaching pedagogy so that it is more closely based on mathematical thinking in real-life contexts. The paper also describes the initial development of scales to measure the self-reported ability of pre-service teachers to think mathematically and to teach mathematics using pedagogies as specified by the recently developed Australian Professional Standards for Teachers. Early data analysis indicates that the scales developed will have the potential to provide robust measures of these dimensions.

Introduction

This paper reports on the initial stages of a project that addresses two critical issues in mathematics and science education in Australia: the lack of confidence and competence of teachers in the lower and middle schools in regional and rural locations. The project is addressing these issues through the development of interventions targeting pre-lesson enhancement and post-lesson reflection and feedback. The interventions developed will be incorporated into pre-service teacher education programs in a number of regional universities. A particular feature of the approach upon which the interventions are based is a focus on how mathematicians and scientists think and solve problems and how this may be linked to the ways that people solve problems in everyday life. This report will focus on the development and validation of the scales that will be used to measure the target constructs in the
The Australian mathematics and science context

There has been a steady reduction in the number of students who are studying mathematics and science at both the secondary and tertiary levels of education (Ainsley, Kos, & Nicholas, 2008; Lyons & Quinn, 2010). There is also a shortage of appropriately qualified mathematics and science teachers available to teach at the secondary school level, particularly in rural schools (Harris & Farrell, 2007; Tytler, 2007). Thomson (2009), in a report based on the 2007 TIMSS data, identified that many teachers of year 4 reported have little specific training or specialised education appropriate upon which to base their teaching of the TIMSS assessment topics. Australia’s Chief Scientist expressed his concern in relation to the state of Australian STEM education (Office of the Chief Scientist, 2012a, 2014). He also identified that the primary influences on the style of STEM teaching included “time and resource constraints, and in some cases confidence and training” (2012a, p. 10) and that “there is now a shortage of qualified science, mathematics and information communications technology teachers, and the participation rates of Australian school and tertiary students in STEM disciplines remain a matter of concern” (2014, p. 21). He also proposed that one key step in developing STEM literacy in schools was by “helping schools to teach STEM as it is practiced, in ways that engage students, encourage curiosity and reflection, and link classroom topics to the ‘real world’” (2014, p. 23).

The issue of a lack of confidence of teachers of science and mathematics and its adverse effects on student learning and engagement have been described frequently (Bursal & Paznokas, 2006; Garbett, 2003; Murphy, Neil, & Beggs, 2007; Victorian Auditor-General, 2012). Figure 1 below shows trends in enrolments in mathematics in Australian secondary schools for year 12 for the period from 1995 to 2010 (Office of the Chief Scientist, 2012b).
The data presented in Figure 2 demonstrates that, while the reduction in students studying advanced mathematics courses has reduced by four percent over that period, there has been a substantial shift from those studying intermediate mathematics courses where the reduction is of the order of nearly 12%.

The issues associated with participation in mathematics and science is particularly evident in rural and remote schools, where students from these locations have been identified as possessing lower levels of mathematical literacy (Thomson, De Bortoli, Nicholas, & Buckley, 2011). STEM teachers in rural and remote schools also report “a significantly higher unmet need for their students to have access to a broad range of learning experiences including opportunities to visit education sites, than did their metropolitan colleagues” (Lyons, Cooksey, Panizzon, Parnell, & Pegg, 2006, p. vii). While the literature reports reduced participation rates for students from rural and remote schools and these students are underrepresented in university study in Australia (Bradley, Noonan, Nugent, & Scales, 2008), those who do enrol in STEM related university courses are no more likely to drop out than students from metropolitan centres (Wilson, Lyons, & Quinn, 2013).

The difficulty of improving achievement and participation rates in science and mathematics was illustrated in Victoria, Australia, where, despite a 2006 Victorian Parliamentary inquiry requiring education authorities in that State to address science and mathematics participation and achievement rates, little success had been achieved by 2012 (Victorian Auditor-General, 2012). Interviews with year 6 and 9 students during the audit phase of this study identified that students considered “mathematics as important to their
future, but not necessarily fun and interesting” (p. 13) due to a heavy focus in teaching on textbook work. Achievement levels in mathematics and science in the middle years of schooling did not improve and, “while most students [met] the very low minimum standards, there are not enough high-achieving students” (p. 8) and the much lower achievement levels of students from low socio-economic and non-metropolitan backgrounds was not effectively addressed.

The magnitude of the challenge facing science and mathematics education in Australia is evidenced by the funding of the Australian Maths and Science Partnerships Program (AMSPP) in 2012 by the Australian Government (see https://education.gov.au/australian-maths-and-science-partnerships-program). At that time $5.2 million was provided for seven research projects. A further $16.4 million was provided in mid-2014.

**It’s part of my life: Engaging University and community to enhance science and mathematics education project**

This paper reports on initial research efforts for the project, It’s part of my life: Engaging University and community to enhance science and mathematics education, funded by Australian Office of Learning and Teaching (scu.edu.au/education/index.php/57). The primary project aims are to enhance the learning for students of science and mathematics in primary and lower secondary school through improving the competence and confidence of pre-service teachers (PSTs). The project involves the development of two interventions. The first being a pre-teaching enhancement, where PST’s have the opportunity to engage with academics from the participating university, comprising a mathematics educator from the School of Education and two mathematicians from the School of Science and Technology. The purpose of this intervention is to assist the PST’s in identifying the mathematics thinking that is involved in the topic to be taught and to enhance the PST’s ability to identify practical real-life applications where that mathematical thinking is used and to apply this to a teaching lesson. The expected benefits of this intervention are that the teaching will enhance students’ ability to think like a mathematician through the use of the investigation of real life contexts. The second intervention involves a reflection and feedback session where PST’s are able to engage in a process where they reflect on their experiences and emotions during the lesson being taught and examine how these effect their confidence and competence in teaching mathematics.

**The Australian Teacher Professional Standards**

In an attempt to raise the professional standards of teaching in Australia, the Australian Government has funded the introduction of a set of professional standards for school teachers. The standards were developed in consultation with educators from across the country by the Australian Institute for Teaching and School Leadership (AITSL). These standards are now used throughout Australia as the basis for setting the professional behaviour and conduct expected of teachers and describe the skills expected of teachers at the
various levels (see http://www.aitsl.edu.au/australian-professional-standards-for-teachers/standards/list). The lowest level of standards is set for the Graduate Teacher.

Each State and Territory in Australia maintains a teacher registration authority that undertakes the registration of all teachers. Pre-service teachers must meet the requirements for the Graduate Teacher level in the AITSL standards before they are able to granted registration to teach. The standards are divided into seven different categories:

1. Know students and how they learn
2. Know the content and how to teach it
3. Plan for and implement effective teaching and learning
4. Create and maintain supportive and safe learning environments
5. Assess, provide feedback and report on student learning
6. Engage in professional learning
7. Meet professional ethics and responsibilities

The standards considered most relevant to the day-to-day classroom experience of mathematics students were considered to be standards 1, 2, 3 and 4. These standards were considered to be those that provided the basis for assessing the effectiveness of teaching for PST’s as they prepare to enter the ranks of professional primary and secondary educators.

**Instrument development**

The research project required test-retest analysis to measure changes in the capacity of PST’s to:

- think mathematically and recognise how mathematical thinking is used in real life situations;
- plan and teach mathematics lessons in the context of real life situations that enhance mathematical thinking in students
- plan and teach mathematics lessons where they demonstrate the student-centred practices required in standards 1 to 4 of the Australian Professional Teaching Standards; and
- use feedback to reflect on and improve their teaching.

Academics from the Schools of Education at two participating universities proposed items that might be able to be used to form a Likert-type scale for each of the constructs. The final set of Likert items was assessed for face validity by a panel of academics from the universities. The final questionnaire comprised 31 items. The Likert items used a five point scale with responses Not at all, Slightly, Somewhat, Moderately and Extremely. A final option of Unable to Rate was also provided. A number of items were also included to determine demographic differences based on gender, age and previous mathematic curriculum instruction and teaching experience. The instrument asked respondents to report on the number of block practicums (field experiences) (NBP) completed as part of their pre-service teacher education, the number of mathematics curriculum units completed at
university (NMCU), and the number of mathematics lessons they had taught in total (NMLT).

One item was included asking respondents to report on the mathematics subjects, if any, that were completed in the last two years of secondary school. The purpose of this item was to allow for an investigation of the influence of type of secondary mathematics study on mathematical thinking and teaching confidence/competence. The data obtained from this item was difficult to interpret due to the range of responses that respondents provided and this important aspect of the study could not be addressed and will need to be enhanced in later research.

The survey was initially trialled at one of the participating institutions where students enrolled in pre-service teacher education courses were invited by email to participate in an online survey. At the time of writing of this report, 187 surveys had been commenced, with 130 respondents successfully completing all items. Only completed surveys were included in the data analysis.

A Principal Components Analysis (PCA) was conducted using a direct oblimin rotation based on a consideration that the factors would be correlated (Smith & Huinker, 2000). The eigenvalue test greater than one rule (Ho, 2006) and an examination of the associated Scree plot (Zwick & Velicer, 1982) indicated a four factor solution. The final four factor solution comprised a total of 28 items and accounted for 75.6% of the variance in the constituent items. The PCA pattern matrix is shown in Appendix 1.

The Kaiser-Meyer-Olkin Measure of Sampling Adequacy was .903 and Bartlett’s Test of Sphericity ($p < .001$) indicated that the correlation matrix was suitable for factor analysis. Cronbach’s alpha was used to determine the level of internal consistency for each of the scales identified. George and Mallery (2003) identify a Cronbach’s alpha of .9 or above as excellent and .8 or above as good.

**Factor 1 – Mathematical Thinking Scale**

The first scale identified, the Mathematical Thinking Scale (MTS), comprised 12 items giving a scale range of 12 to 60, with a mid-range of 36. The Cronbach’s alpha for the scale was .965, indicating an excellent level of internal consistency. The inter-item correlations ranged from .532 to .845 ($p < .01$). The items comprising the scale and their factor loadings are shown in Table 1.
Table 1 – Mathematical Thinking Scale item summary

<table>
<thead>
<tr>
<th>Item No</th>
<th>Item Text</th>
<th>Factor Loading</th>
</tr>
</thead>
<tbody>
<tr>
<td>15_16</td>
<td>I am able to see how mathematics problem solving is similar to every-day problem solving</td>
<td>.884</td>
</tr>
<tr>
<td>15_12</td>
<td>I am able to communicate, in, with and about mathematics</td>
<td>.879</td>
</tr>
<tr>
<td>15_17</td>
<td>I am able to understand how I use mathematics problem solving methods in my daily life</td>
<td>.878</td>
</tr>
<tr>
<td>15_14</td>
<td>I am able to understand that school mathematics is not just about content but also about mathematical thinking</td>
<td>.873</td>
</tr>
<tr>
<td>15_15</td>
<td>I am able to understand that a major reason for using mathematical thinking is to solve problems</td>
<td>.870</td>
</tr>
<tr>
<td>15_10</td>
<td>I am comfortable representing and thinking about mathematical objects in more than one way</td>
<td>.866</td>
</tr>
<tr>
<td>15_11</td>
<td>I am able to handle symbol language and formal mathematics systems</td>
<td>.840</td>
</tr>
<tr>
<td>15_13</td>
<td>I am able to make use of and relate to the aids and tools of mathematics</td>
<td>.780</td>
</tr>
<tr>
<td>15_8</td>
<td>I am able to analyse and build mathematical models concerning other subjects</td>
<td>.770</td>
</tr>
<tr>
<td>15_6</td>
<td>I am able to use mathematical modes of thinking</td>
<td>.743</td>
</tr>
<tr>
<td>15_18</td>
<td>I am able to show my students how to think like a mathematician</td>
<td>.711</td>
</tr>
<tr>
<td>15_9</td>
<td>I am able to reason logically</td>
<td>.646</td>
</tr>
</tbody>
</table>

A summated value was calculated for each respondent for the MTS and the distribution of results for the scale is shown in Figure 1. The overall result for the scale was a mean of 44.8 and standard deviation of 10.4, with some negative skewing.

![Figure 1 – Mathematical Thinking Scale data distribution](image)

Two Likert-style items were also included to give an indication of the respondents’ abilities in mathematics (Mathematics is one of my strongest subjects) and their perception of their ability to use mathematics in everyday situations (I know how a mathematician approaches an everyday problem). Five options from Strongly Disagree to Strongly Agree were provided. Figure 2 shows the distribution of responses for these items.
The distributions shown in Figure 2 indicate that 48% of respondents did not agree with mathematics being one of their strongest subjects and 41% did not agree that they knew how a mathematician approaches an everyday problem. These figures suggest that there are a substantial number of the respondents who would be lacking in confidence to teach mathematics and to engage students with mathematics in everyday problem solving contexts.

**Factor 2 – Student Support Teaching Scale**

The second scale identified, the Student Support Teaching Scale (SSTS), comprised five items giving a scale range of 5 to 25, with a mid-range of 15. The Cronbach’s alpha for the scale was .886, indicating a high level of internal consistency. Inter-item correlations ranged from .540 to .725 ($p < .01$). The items comprising the scale and their factor loadings are shown in Table 2.

<table>
<thead>
<tr>
<th>Item No</th>
<th>Item Text</th>
<th>Factor Loading</th>
</tr>
</thead>
<tbody>
<tr>
<td>14_4</td>
<td>I am able to recognise both attending and non-attending behaviour</td>
<td>.906</td>
</tr>
<tr>
<td>14_5</td>
<td>I am able to motivate students to interact with learning materials</td>
<td>.772</td>
</tr>
<tr>
<td>14_3</td>
<td>I am able to demonstrate a range of communication strategies to support student engagement</td>
<td>.745</td>
</tr>
<tr>
<td>14_1</td>
<td>I am able to understand how students learn</td>
<td>.736</td>
</tr>
<tr>
<td>14_2</td>
<td>I am able to differentiate my teaching to meet the individual needs of students</td>
<td>.721</td>
</tr>
<tr>
<td>14_6</td>
<td>I am able to incorporate students methods of problem solving in my lessons</td>
<td>.711</td>
</tr>
</tbody>
</table>

The summated scale result distribution for the SSTS is shown in Figure 3. The descriptive statistics for the scale indicated a mean of 23.6 and a standard deviation of 3.6 with two low outliers.
The Mathematics Teaching Pedagogy Scale (MTPS) was developed based on five items, giving a scale range of 5 to 25, with a mid-range of 15. The Cronbach’s alpha for the scale was .923, indicating a very high level of internal consistency. Inter-item correlations ranged from .522 to .888 ($p < .01$). The items comprising the scale and their factor loadings are shown in Table 3.

Table 3 – Mathematics Teaching Pedagogy Scale item summary

<table>
<thead>
<tr>
<th>Item No</th>
<th>Item Text</th>
<th>Factor Loading</th>
</tr>
</thead>
<tbody>
<tr>
<td>15_2</td>
<td>I am able to use curriculum knowledge to design lesson plans</td>
<td>.868</td>
</tr>
<tr>
<td>15_4</td>
<td>I am able to sequence suitable learning experiences for students</td>
<td>.775</td>
</tr>
<tr>
<td>15_3</td>
<td>I am able to use a wide range of teaching strategies</td>
<td>.750</td>
</tr>
<tr>
<td>15_5</td>
<td>I am able to effectively organise content knowledge for sequential teaching</td>
<td>.746</td>
</tr>
<tr>
<td>15_1</td>
<td>I am able to demonstrate appropriate content knowledge</td>
<td>.689</td>
</tr>
</tbody>
</table>

The summated scale distribution for the respondents for the MTPS is shown in Figure 4. The descriptive statistics for the scale indicated a mean of 23.6 and a standard deviation of 3.6 with a number of low outliers.
Factor 4 – Teaching Reflection Scale

The final scale identified, the Teaching Reflection Scale (TRS), was developed based on three items, giving a scale range of 3 to 15, with a mid-range of 9. The Cronbach’s alpha for the scale was .854, indicating a high level of internal consistency. Inter-item correlations ranged from .571 to .715 ($p < .01$). The items comprising the scale and their factor loadings are shown in Table 4.

Table 4 – Teaching Reflection Scale item summary

<table>
<thead>
<tr>
<th>Item No</th>
<th>Item Text</th>
<th>Factor Loading</th>
</tr>
</thead>
<tbody>
<tr>
<td>14_8</td>
<td>I am able to understand how my positive and negative emotions impact on my teaching</td>
<td>.785</td>
</tr>
<tr>
<td>14_7</td>
<td>I am able to reflect critically on my lesson performance in order to improve my teaching</td>
<td>.749</td>
</tr>
<tr>
<td>14_9</td>
<td>I am able to consider my previous lesson performances to improve my teaching</td>
<td>.713</td>
</tr>
</tbody>
</table>

The summated scale distribution for the respondents for the TRS is shown in Figure 5. The descriptive statistics for the scale indicated a mean of 13.1 and standard deviation of 1.9. The distribution for the scale demonstrated a pronounced ceiling effect. This limits the capacity of this scale to be used for parametric analysis and it would need to be enhanced through the inclusion of additional items which are more challenging for respondents as regards agreement.
Data analysis

Mann-Whitney $U$-tests were conducted to identify differences based upon gender, with the results shown in Table 5.

Table 5 – Mann-Whitney $U$-tests – gender as control variable

<table>
<thead>
<tr>
<th>Variable</th>
<th>N</th>
<th>Mean Rank</th>
<th>$U$</th>
<th>$p$</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Male</td>
<td>Female</td>
<td>Male</td>
<td>Female</td>
</tr>
<tr>
<td>Age</td>
<td>14</td>
<td>116</td>
<td>91.7</td>
<td>62.3</td>
</tr>
<tr>
<td>NBP</td>
<td>14</td>
<td>116</td>
<td>61.8</td>
<td>66.0</td>
</tr>
<tr>
<td>NMCU</td>
<td>14</td>
<td>116</td>
<td>60.2</td>
<td>66.1</td>
</tr>
<tr>
<td>MNLT</td>
<td>14</td>
<td>116</td>
<td>71.5</td>
<td>54.8</td>
</tr>
<tr>
<td>MTS</td>
<td>11</td>
<td>90</td>
<td>47.1</td>
<td>51.5</td>
</tr>
<tr>
<td>SSTS</td>
<td>12</td>
<td>96</td>
<td>64.6</td>
<td>53.2</td>
</tr>
<tr>
<td>MTPS</td>
<td>12</td>
<td>91</td>
<td>57.3</td>
<td>51.3</td>
</tr>
<tr>
<td>TRS</td>
<td>13</td>
<td>100</td>
<td>51.9</td>
<td>57.7</td>
</tr>
</tbody>
</table>

** $p < .01$  

There appears to be little difference based upon gender in any of the variables, although males were significantly older than females. While the low number of male respondents indicates that this result should be viewed with caution, it appears at this early stage that there may not be gender differences in the constructs which are the focus of this study.

A Spearman’s correlation matrix was generated for the variables being examined and is shown in Table 6.
Table 6 – Spearman’s correlation matrix

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Age</td>
<td>--</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. NBP</td>
<td>.008</td>
<td>--</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. NMCU</td>
<td>.163</td>
<td>.168</td>
<td>--</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. MNLT</td>
<td>.090</td>
<td>.525**</td>
<td>.397**</td>
<td>--</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. MTS</td>
<td>.206*</td>
<td>.174</td>
<td>.351**</td>
<td>.373**</td>
<td>--</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. SSTS</td>
<td>.193*</td>
<td>.215*</td>
<td>-.103</td>
<td>.216*</td>
<td>.437**</td>
<td>--</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. MTPS</td>
<td>.247*</td>
<td>.320**</td>
<td>.117</td>
<td>.325**</td>
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<td>.587**</td>
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<td>.341**</td>
<td>.588**</td>
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* p < .05  ** p < .01

The TRS scale, while demonstrating quite high significant correlations for the MTS, SSTS and MTPS scales, did not demonstrate correlations with the NBP, NMCU or MNLT variables. The correlation between TRS and NMCU in particular is significant and negative. This suggests that the amount of experience that the respondents had in terms of practical teaching and instruction in mathematics teaching pedagogy was not associated with reflection on teaching practice or on the respondents’ understanding of the impact of emotions on teaching. Considering that the identification of strategies to enhance PST confidence and competence through reflection practices is one of the primary aims of the project, this finding indicates that opportunity exists in this area for the project to make a contribution to teaching practice.

A second primary aim of the project is to enhance PST confidence and competence through improving mathematical thinking and the base their teaching on mathematical thinking in real life contexts. The MTS scale demonstrated a significant and moderate correlation with both the NMCU and MNLT scales, suggesting a positive role in improving mathematical thinking from the study of mathematics curriculum units and practical teaching experience. Of particular interest is the high level of correlation between the MTS and MTPS scales, providing support for the view that the ability to think mathematically and apply mathematical thinking in a real life context is translated into teaching practice in mathematics classrooms.

It was expected that the NMCU scale would be well correlated with all of the summative Likert scales, as it was considered that increased instruction in mathematics curriculum units would be demonstrated in higher correlations in the MTS, SSTS, MTPS and TRS scales. This behaviour was demonstrated only for the MTS scale, with the other correlations being not significant and low and, in the case of the TRS scale, significant and negative. This finding gives rise to concern as to the effectiveness of the mathematics curriculum units in improving mathematics teaching pedagogy at the institution where the study was conducted and indicates that further research would be appropriate to further investigate this issue.

A similar concern is evident based upon the correlations for the SSTS. The items that comprise the SSTS scale are those that reflect the requirements of the Australian teaching standards and are focused on the respondents’ ability to motivate and engage students, to
understand how students learn and to cater to individual student differences in the classroom. The correlations for the SSTS scale for the NBP, NMCU and MNLT scales, while significant for the NBP and NMCU scales, are all surprisingly low.

**Conclusion**

The It’s part of my life project is attempting to improve the teaching of mathematics in regional and remote schools in Australia through the development of interventions that will improve mathematical thinking, the application of mathematical thinking in the real world and the use of feedback and reflection as a means of understanding how confidence and competence are influenced by the emotional experience of teaching. This paper reports on an early stage of the project and presents early attempts to develop the means by which the changes in the targeted constructs may be measured. The small sample size represents a substantial limitation on the capacity of the findings from this research to be applied at this early stage outside the institution where the research was conducted. However, over the course of the project as the sample size increases though repeated use of, and development of the instruments, this limitation will be addressed.

Despite the relatively small sample size, three of the four scales identified appear to be robust. The MTS, SSTS and MTPS demonstrated high internal consistency and comprised of a minimum of five items that loaded highly on the factor in the factor analysis (Ho, 2006). The data distribution for each of these scales was such that a larger dataset should approximate a normal distribution.

The primary finding of this research that has implications for practice at the university where the research was conducted is the relatively low correlations between the practical teaching experience and number of mathematics curriculum units completed with the summative Likert scales measuring mathematical thinking, teaching pedagogy and reflection. This finding provides support for why projects such as It’s part of my life are required to improve the teaching of primary and secondary school mathematics and science through improving the confidence and competence of graduate teachers.

**References**


### Appendix 1 – PCA pattern matrix

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<th>Item</th>
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Title: Integrating Earthquake Engineering Research into Senior Project Design to Enhance Undergraduate Engineering Education

Abstract: Despite the ever-expanding technical and professional knowledge, the credits required for a four-year undergraduate civil engineering degree have decreased significantly in the past. The expanding technical and professional knowledge required by professional engineers can no longer be learned within a four-year bachelor’s degree experience. This raises a great challenge for all engineering educators and professionals. Senior design project often serves as capstone for students between engineering education and professional practice. This paper presents the engagement of undergraduate students into earthquake engineering research through senior design project at San Francisco State University. Two undergraduate students are involved into design and evaluation of steel plate shear wall for seismic hazard mitigation. Weekly meeting and introductory lectures are provided on structural design for these students. The students were further instructed to conduct time history analysis and to interpret for the performances of their designed SPSW structures. Through the research project, the two undergraduate students developed valuable experience beyond their undergraduate education and are better prepared for their profession. The integration with senior design project therefore provides an exploration to enhance engineering education to mitigate the gap between existing engineering education and ever expanding profession.
Virtual Identity: An Exploration of the 21st Century Student’s New Socialization Experience (Workshop submission)

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88 Church St. Apt. #3 - St. Catharines ON – L2R 3C8
maryalexiscode@hotmail.com

Abstract for workshop:

In 2014, the new realities of our Digital Age have caused a radical shift in the execution of social exchanges among individuals in society, changing the role that major agents of socialization now play in the 21st century. Within the school system, our current student body encompasses their traditional physical identity, but now additionally personifies an embodied "virtual identity" that is an omnipresent force within these students' social interactions both in and out of the classroom. This qualitative M.Ed research project examines the connected learners that are having these virtual experiences to enlighten educators on how performances of virtual identity can influence the ways in which students relate to each other within and outside of a school context. This project builds off Pierre Bourdieu’s (1986) work to investigate the existence of a virtual social capital that materializes through the ways in which students perform their identities online, and also explores students’ attitudes on how virtual identities manifest within synergy and socialization of the physical classroom setting. Jenkins et al.’s (2009) “participatory cultures,” James Gee’s (2005) “affinity spaces,” and other facets of 21st century pedagogy such as Marc Prensky’s (2010) “partnering pedagogy” are employed while asking current learners how digital mediums have influenced their perceptions of what constitutes
formal knowledge in the education experience. This presentation will illuminate the complexities of the new socialization experience and constructions of knowledge in the 21st century to inform teachers’ classroom practices and enrich perspectives on 21st century pedagogy.
Counselor Self-Exploration as it Relates to the Communication Process

This article explores the pre-requisites of the helping profession as well as basic guidelines of counseling and emancipation from self.

Pre-requisites of the Helping Profession

1. We must sincerely *want* to enter the profession. We must want to work with individuals with concerns. We must have a continued passion and enthusiasm for what we have chosen to do or we will disintegrate into inadequacy.

2. We must be willing to give *time*. Counseling cannot be mailed in; it is a face-to-face relationship that requires a portion of our lifetime.

3. We must derive *satisfaction* from what we do if we are to replenish ourselves professionally. Most of us enjoy nurturing others. As counselors, we touch people and they *grow*. There are those who touch people and cause them to shrink.

Basic Guidelines of the Counseling Process

1. Clients come to counseling because they want change in their lives. We can help to promote change by either adding or reducing forces in our clients’ lives. Adding forces involves giving advice, suggestions and information. Reducing forces is a more important counselor role in that it addresses hindrances that may be preventing change within the client.

2. The primary goal in counseling is emancipation. To help or clients become self-directing by introducing them to the skills of decision making, problem solving, critical thinking, risk tolerance, and confidence building.

3. An effective counseling session is not concerned with whether the client leaves either happy or sad but rather that they leave the counseling session *thinking*.

4. The primary tool of the counselor is *communication*.

5. The foundation of the counseling process is that it is a relationship. As in all relationships we must remember that it involves the changing process of relating. It is a verb not a noun. It requires an individual’s *commitment, agreement and investment*. 
Counselor Emancipations and Transformations as Readiness for Counseling

1. **Clarity vs. Solutions**: Counselors provide clarity of self and situations so clients can find their own solutions and make their own decisions. A counselor who gives advice is not helping the client learn how to become self-directed.

2. **Observer vs. Reformer**: Observation is to be with something without a point of view. Our emphasis is not to reform but to observe the behavior that is being demonstrated. Our focus is on the problem as well as the client presenting the concern.

3. **Understanding through the Client’s Perception**: We must see the world through our client’s eyes not our own if we want to understand our client’s world. Acceptance of our client is the residue of true understanding and acceptance. Understanding leads to mutual respect.

4. **Communication vs. Conversation**: We can define communication as sharing the meaning of an experience, while conversation can be defined as sharing the experience only.

5. **Participation vs. Removed**: We must invest ourselves 100 percent in being with those things we choose in life. To the extent that we do not, that is the extent to which we exist rather than live. The counselor must be “with” his client 100 percent.

6. **Confiding vs. Confessing**: Confiding is affective in nature while confessing is cognitive in nature. We gravitate to those we can confide in and likewise distance ourselves from those of whom we feel we have confessed. With confiding, we do not feel as if we have lost one iota of our self-concept or self-esteem.
Thank you for your submission to the Hawaii International Conference on Education!

Your submission will now undergo a 2–3 week review process. Review results will be sent via email attachment. Each listed author will receive a personalized emailed letter within 3 weeks. If you do not receive the review results within 3 weeks, please email us at education@hiceducation.org

If you wish to add/edit/delete authors, or update your submission title/format please email us with the details.

If you are interested in serving as a volunteer submission reviewer, please email your request along with the topic area(s) you would be interested in reviewing.

Below is your submission ID number. Refer to this number when corresponding with the conference staff.

Submission ID: 1316
Submission Title: Corpus–based Stylistic Analysis of Frederick Buechner: How a Pulitzer Prize finalist and Minister Conveys His Ideas
Topic Area: Cross-disciplinary Areas of Education
Presentation Format: paper

Thank you,
Joelle Vega
Conference Coordinator

-----Original Message-----
From: Hiromi Hadley [mailto:hadleyh@ge.niigata-u.ac.jp]
Sent: Tuesday, September 23, 2014 3:30 AM
To: education@hiceducation.org
Subject: HICE 2015 Submission

To whom it may concern,

Attached please find my title page and abstract for consideration for HICE 2015.

Thank you.
Sincerely,
Hiromi Hadley
Niigata University
Conference Proceedings:

Title of the Submission:
Supporting Adolescents “At-Risk” of Dropping Out of High School: A Case Study for a Successful High School

Name of Author:
Janene M. Beck-Hafner, Ph.D.

Affiliation of Author:
Director of Pupil Services
Unified School District of Antigo

Address of the Author:
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Email Address of the Author:
drjmbh68@yahoo.com

Description of the Presentation:
What are the “big three” strategies that ensure success with struggling high school students? This presentation discusses the “big three” strategies discovered while researching adolescent development and interviewing students, administrators and staff. The presenter will also share ways to implement the strategies in school districts that may have ample or limited resources.

Abstract:
SUPPORTING ADOLESCENTS AT-RISK OF DROPPING OUT OF HIGH SCHOOL: A CASE STUDY OF A SUCCESSFUL HIGH SCHOOL

Janene M. Beck-Hafner, Ph.D.

High school administrators and staff are continuously trying to find ways to assist adolescents who are struggling with the cognitive, physical, social, and emotional challenges of high school. This study focuses on the administrator, teacher and student perspectives of strategies that are implemented to assist struggling students.

This qualitative study is divided into five chapters. Chapter One introduces a discussion of the problem, and significance and implications of the problem. Chapter Two is a review of the literature on adolescent development, the history of the American High School, and high school reform initiatives. Chapter Three reviews the design and methodology of the study, and how the data was analyzed. Chapter Four provides a
descriptive narrative of the high school program studied as well as detailed information from interviews and surveys related to the sub-questions of the study. Chapter Five presents the conclusions, implications and recommendations for further study.

The data collected provided detailed descriptions of the strategies being used to reach students who are becoming “at-risk” of not graduating from high school, and discusses the commonalities between the data collected from the administrators, staff and students.

Submission ID Number: 1319
Title of the Submission:
Freshmen Survival: An Opportunity for a Successful Transition to High School

Name of Author:
Janene M. Beck-Hafner, Ph.D.

Affiliation of Author:
Director of Pupil Services
Unified School District of Antigo

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Antigo, WI 54409

Email Address of the Author:
drjmbh68@yahoo.com

Description of the Presentation:
Janene Beck-Hafner, Ph.D., will take the audience through a step-by-step process to plan a summer school transition program that meets the academic, social, emotional and environmental demands of the high school setting. Janene will share research on adolescent development and the creation of the “Freshmen Survival” program as well as the “how-to’s” of program planning and implementation.

Abstract:
FRESHMEN SURVIVAL: AN OPPORTUNITY FOR A SUCCESSFUL HIGH SCHOOL TRANSITION

In an effort to ease the transition for students between middle school and high school, the Antigo School District developed a summer school program for incoming freshmen students to assist with the academic, social, emotional and environmental demands of the high school setting. This program provides the regular education, at-risk and special education students with the information and activities that build character and confidence in teens to ensure success as they continue their journey through secondary education.

The presentation of the Freshmen Survival program begins with the program goal. The “why” the program was created and the “how” of implementation are shared. Next, the presenter will lead the audience through a day by day list of specific activities of the program, the research on the benefits
of successful transition programs for both students and parents and end with statistical information on the progress of the students who have participated in the program.

Submission ID Number: 1320
Student Learning Outcomes: Are We On the Right Track?

Jodi M. Senk
Doctoral Candidate in Organizational Leadership
Graduate School of Education and Psychology
Pepperdine University, USA
Jmsenk@pepperdine.edu

Student learning outcomes (SLOs) have become a focus for colleges and accrediting agencies over the years. However, do they really enhance learning? Are students more successful? Does it include both student accountability and responsibility? Further, while a system of rubrics for grading can be implemented to assess knowledge, perhaps implementing pre- and post-assessments for students can provide feedback and also demonstrate congruent learning results correlating grades with student self-assessment.
Abstract: Student learning outcomes (SLOs) have become a focus for college administration and accrediting agencies over the years. However, do they really enhance learning? Are students more successful? Does it include both student accountability and responsibility? While faculty align course objectives with desired outcomes for learning, do these objectives and assessments affect student learning and an increase in positive outcomes?

Further, while a system of rubrics for grading can be implemented to assess knowledge, perhaps implementing pre- and post-assessments for students can provide feedback and also demonstrate congruent learning results, correlating grades with student self-assessment. Discussions amongst faculty in focus groups demonstrated the lack of integrating the student in the process. By aligning both evaluative methods, results may present a correlation to learning, and SLOs could be made to be more useful for both faculty and students.
Gamification in the Adult Academic Learning Environment

Poster Session

Authors / Presenters:

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Proposed Presentation Format:

Outline:

- History of Gamification and application in Higher Education
- Gamification and Various Learning Theories
- Game-play Integration in Staff Development Courses at University of Washington
- Provide samples of currently used gamification formats and application at
- Highlight Best Practices & Success
The term “gamification” has recently become an informal umbrella for the use of video game elements in non-gaming systems and applications - with the intent of improving user engagement. For educators, the objective is to improve engagement, but more so, to increase retention and mastery of content, encourage creative risk-taking, and to stimulate greater strategic reasoning.

Recent brain-based research suggests a similarity between effective methods of activating fundamental motivation triggers in games, and the principles of adult learning. Therefore, our first step in game formatting was to construct correlations between Knowles’s Andragogy, Blooms Domains of Learning, and theories of intrinsic and extrinsic motivation, to elements of gamification. More specifically, we identified specific learning objectives within a determined course that would lend itself to gamification, and associated it with learning theories that would support the alternative structure.

Gamification is more widely used in technological applications, yet in our environment, we chose a more assessable and economical medium: the board game. We’ve integrated this construct into our existing course instruction also because it provides hands-on cognitive development and a non-threatening, playful, yet competitive environment. The game elements, discussions, and problem solving with fellow team members serve as vehicles for learning, and by incorporating questions, problems to solve, and situations to consider, learners are challenged to think through to application.

In a report on gamification in the K-12 experience,* Columbia University’s Assistant Professor of Technology & Education, Joey Lee PhD., stated “Bringing education and game elements together could turn out like peanut butter meeting chocolate: two great tastes working together, leading to results that are especially important for developing 21st century skills. Gamification can motivate students to engage in the classroom, give teachers better tools to guide and reward students, and get students to bring their full selves to the pursuit of learning. It can show them the ways that education can be a joyful experience, and the blurring of boundaries between informal and formal learning can inspire students to learn in life-wide, lifelong, and life-deep ways.”

In higher ed. institutions, very little research and experimentation with non-technical gamification has been documented. Our ongoing integration has been to determine if gamification can make significant improvements in the adult learners’ engagement, retention, and overall quality of learning, as it has with children and younger students, or whether it is just an en vogue notion with no practical relevance in the university environment long-term.

The poster session is designed to highlight game theory and its impacts on adult learning when integrated into staff development courses. The poster will reveal current approaches and sample formats used at the University of Washington. The poster session will also allow practitioners the opportunity to question the notion of gaming impacting engagement, retention and experience. In our experience gaming and play in Staff Development course has enhanced both the teaching and learning experience. Instructors are able to be flexible with content while including diverse learning styles and the learners are challenged to think strategically and creatively through to the application of new knowledge and skills, and since the games are relatively easy to play, the application of learning and mastery of content is made accessible to all learners allowing risk-taking in a low pressure/ low stakes environment sprinkled with the fun-factor.

Title: Contextual challenges and school leadership development in the small island developing states of Fiji

Topic Area: Educational Administration

Presentation: Paper Session

Description:
There are a significant number of secondary schools in rural and isolated areas of Fiji. The principals in these schools encounter a number of challenges that are unique to their rural environment. This study seeks to explore the challenges faced by rural school principals and their needs and to incorporate this new knowledge into leadership development programs designed to prepare future school leaders in rural context.

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University: University of the South Pacific

Email: lingam_n@usp.ac.fj
Contextual challenges and school leadership development in the small island developing states of Fiji

Abstract

Rural school principals in the small island developing states of the Fiji encounter a number of challenges that are unique to their environment. These challenges stem from a number of sources, from within the school division structure, from a community perspective, and from within the school setting itself. This article therefore, explores the perspectives of rural school principals in Fiji to leadership challenges they identify as characteristics of rural context. The article further seeks to examine the impact these perceptions have on future leadership development of rural principals.

This paper on the perspectives of rural Fijian school principals on their experiences was set with in a qualitative interpretive research paradigm utilizing a mixed method strategy to collect data from five rural schools. The data gathering process included, questionnaires, collection of relevant documents and in-depth interviews with the principals and teachers. The views expressed by the principals were analysed using the inductive approach. The paper presents a summary of some emerging findings on the challenges faced by rural principals in exhibiting their leadership practices while grappling with the new demands afforded by the Fiji Ministry of Education.

This article contends that Fijian principals in rural environments encounter significant challenges that are context-specific. Understanding these challenges faced by rural principals in enacting their leadership practices is central to formulating effective leadership development programmes for school leaders to lead 21st century rural schools. Preliminary findings from this research suggest that leadership training programs needs to be ‘contextually responsive’ to cater for the needs of the existing schools in order to improve the learning outcomes of students in rural locales.
Title of submission: Intentional teaching – what exactly is ‘free-play’ and how can teachers take a part?

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Abstract:
A recent study by the authors, involving three Australian early childhood centres, focused on the intentional teaching practices of early childhood teachers. The aim of the study was to provide an in-depth investigation of the intentional teaching methods of early childhood teachers as they provide provocations for creative thinking with four- to-six-year-old children. This paper draws upon data revealing teachers’ emerging identities as intentional teachers as they implemented the Australian Early Years Learning Framework (EYLF). Firstly, this paper describes the relationship of intentional teaching and the role of the teacher in children’s play. Secondly, it investigates teacher’s beliefs and practices regarding children’s play, particularly outdoors. The commonly held idea of ‘free-play’ is challenged drawing on Vygotsky’s socio-cultural approach that regards play as the leading source of development, promoting cognitive, emotional, and social development in young children. Thirdly this paper presents the challenges faced by teachers as they move from indoor learning spaces to outdoor contexts. Finally, this paper contributes a new definition for ‘play’ in early childhood settings based on recent findings from this research as well as socio-cultural theorising and current relevant literature. This paper reclaims the value of play in children’s growth and development within a context of increasing standardisation and national testing. In addition, this paper casts new light on the role of the teacher and peers as children play and construct new knowledge within social and cultural learning contexts.
Mathematics News Snapshots - Meeting the challenge of introducing ALL senior high school students to contemporary mathematics

A workshop at the
13th annual Hawaii International Conference on Education
Honolulu, 5-8 January, 2015
by
Nitsa Movshovitz-Hadar,
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Abstract

In order to cope with the problem of the increasing gap between contemporary mathematics and school mathematics, the rationale for integrating mathematical news in high-school mathematics teaching was first presented At ESU5 – The European Summer University, Prague 2007 (Movshovitz-Hadar 2008). The proposed pedagogy was interweaving mathematical-news-snapshots (abb. MNSs), on a regular basis, in the ordinary teaching of high-school mathematics, where each MNS would be a 15-20 minutes PowerPoint presentation devoted to a single piece of news published in the past decades including its (often long) historical background and (often rich) applications as well as (some) yet unsolved related problems. An empirical study was then advocated to examine this proposed pedagogy towards narrowing the gap, and its impact on students' perception of mathematics as a long-living creative part of human culture.

A 3 years action-research in a few classes followed and took place during 2008-2011. Parts of this study and some of its results were presented at ESU6 workshop, Vienna 2010 (Amit and Movshovitz-Hadar, 2011).

As of 2012 a 3 years feasibility study of disseminating the idea in the wider school system has been supported by The Israel Science Foundation, and carried out in 2 different modes with teachers at public high-schools. In one mode the whole mathematics team in each school participated in a sequence of 90 minutes weekly workshops in which a specialist exposed the team to a series of MNSs, one at a time, and empowered them through specially designed activities, (such as reverse-engineering tracing back the project goals in each MNS, as demonstrated at our ESU6 workshop) to integrate these MNSs, on a regular basis, in their ordinary teaching during the school year. The other mode was that of on-line video conference
in-service course for high school mathematics teachers exposing them to the MNSs one at a time and letting them present each MNS in their chosen classes.

The 2015 Hawaii conference workshop will be focused on sharing with the conference participants, the challenge we faced, the difficulties we coped with and the successes we obtained during this experimental work. The workshop will include:

(i) Some background about the origin of the study;

(ii) A presentation of a sample Math News Snapshot (A write-up of a sample MNS can be found in B. Amit and N. Movshovitz-Hadar (2011).);

(iii) Participants' investment in a reverse engineering exercise of this sample MNS followed by an analysis of the "big ideas" threaded across a new initiative to expose high school students to Mathematics News Snapshots, despite their lack of sufficient preparation to delve into the depth of contemporary mathematics

(iv) the main results from a three years study of implementing a series of MNSs in senior high schools in Israel in 2 different modes;

(v) Call for collaboration with U.S. high school mathematics teachers

References

Exploring Teaching as a Career and Multiculturalism and Education a Study Abroad Experience

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Introduction

In today’s global society, an international experience has become an essential component of higher education. Studying abroad enriches students’ academic experience. They get to live in interesting places, have many opportunities to visit historically and culturally significant sites, examine artifacts they’ve only read about or seen on TV, and interact with local students and faculty. Many will become students at prestigious universities where they have to adjust and learn to thrive in an academic system that usually demands quite a bit of independence and initiative. It is common for returned students to tell us that they returned to their university after their term abroad more focused, more excited about completing their degree program, and with a better idea of what they would like to do after graduation.

Students who study abroad gain economic and geographical knowledge that can’t be captured in a textbook. They learn local customs, taste new foods and explore new interests. In the process of meeting new people from different backgrounds and cultures they will find out more about themselves. Their intellectual and personal maturity through a study abroad experience will change the way they look at the world.

How the Innovative Program Works

Block I in Jamaica (EDCI 20500 – Exploring Teaching as a Career and EDCI 28500 – Multiculturalism and Education) has been offered each Maymester since 2005. This study abroad opportunity is designed for Agricultural Education students or those interested in agriculture. The base of operations is the College of Agriculture, Science, and Education (CASE) in Port Antonio, Jamaica. There are two nearby high schools that have welcomed the agricultural
education students for observations. This interactive co-curricular component into the field observations provides students the opportunity to spend the entire day at a school and participate in the learning with the Jamaican students. Typically this involves one class period of lecture-based instruction and another of lab-based instruction. The Purdue students would take notes and participate in the labs; thereby, learning what it is like to be a Jamaican student and what Jamaican agricultural education is like. For 1 or more class periods, the Purdue students would “teach” the Jamaican students about Indiana agriculture and education. They would have prepared lessons before leaving Purdue that include pictures, information, and something interactive/engaging such as a lab or activity. This helps the Jamaican students to see what agriculture and education in the United States is like.

The budget is all-inclusive of costs for the 18-day experience. The only costs outside of this are meals at airports and any souvenirs students would purchase. This provides for efficiencies of scale. All transportation and lodging are as a group due to remoteness of CASE location (northeast side of island), poor public transportation, and general safety. Students receive 6 credits (EDCI 20500 and EDCI 28500) so the cost is reasonable.

**Major Findings/Results/Observations**

“I absolutely loved this trip! Not only did we learn a lot, but we had so much fun!!”; “This was an amazing life experience that I will never forget. Thank you for all your help and guidance before and during this trip.”; “Neat experiences and great friendships formed.”; “The clothes that we were told to wear (polo’s) were perfect for the days we needed them.”

**Conclusions and Implications**

Students’ overseas experience can enhance students’ professional credentials. Returned students report that interviewers always discuss their international experience with them during job interviews. The personal characteristics and new perspectives that students developed while overseas are valued by more and more companies, organizations, and employers who seek staff
members who can thrive outside their comfort zone, speak a foreign language, and/or live and work more comfortably in a multicultural environment.
**Title of submission:** Their Voices, Our Resources: Students’ Views toward First Year Writing Instruction

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**Abstract**

The research was designed to gain insight into English as a second language (ESL) writers’ learning experiences from their frame of reference in order to seek pedagogical inspiration and personal growth as a per-course instructor. The study investigated their views toward the first year writing instruction, and the challenges they encountered with revision and with teacher commentary. A qualitative case study approach was employed. Six main challenges that the participants reported to have encountered or had actually encountered were identified when they responded to their teacher commentary. The study found that students were unresponsive to teacher commentary in their subsequent revisions not because they disregarded teacher feedback or they disliked revision. Instead, their decisions for not to revise were due to various reasons; some are context-bound and some are individual variables. The paper also discussed how learning from students has enabled the researcher to improve teaching practices.
Introduction

At the university where I teach, we adopt process writing pedagogy in our first-year writing courses for English as a Second Language (ESL) students. Student writers normally produce multiple drafts of an assigned essay. They are also expected to revise each draft based upon teacher comments. However, after several years of seeing a similar teaching issue occur in each class; that is, students did not revise or they just revised superficially, I often felt frustrated and powerless. I started to ponder the effectiveness of process writing instruction and to wonder what can be done to better support my students.

To be an effective composition instructor, I needed to be better informed about what students think of process writing pedagogy and what their challenges are. Therefore, I conducted a qualitative study with 14 students to find potential answers to my questions. My data sources consist of 56 student interview transcripts, two teacher interview transcripts as well as a range of writing samples and written documents. I chose to focus on students and listen to what they say because I believe students are often quite capable of informing us what works for them and what does not work in teaching (Cook-Sather, 2008). Lee (2008) also emphasizes the importance of attending to the voices of students because “without understanding how students feel about and respond to teacher feedback, teachers may run the risk of continually using strategies that are counter-productive” (p. 145). In this research study, six main challenges that the participants reported to have encountered or had actually encountered were identified when they responded to their teacher commentary.

Challenges Students Faced When Responding to Teacher Commentary

During the process of reading and examining the interview transcripts, I grouped my interview participants’ similar statements by themes and six themes emerged. These six themes
include 1) illegible handwriting; 2) vague and incomprehensible comments; 3) lack of knowledge and strategies; 4) appropriation; 5) not having sufficient feedback; and 6) time constraints. Some of these challenges are believed to be the reasons why some participants chose to submit drafts without any changes or with very superficial changes. I now discuss each of these six themes in detail.

**Illegible handwriting.** Despite the popularity of the computer, I noticed that none of the participants’ composition instructors utilized any computer software programs for making comments on students’ work. All of the comments left on the collected essays were handwritten; 11 interviewees mentioned that they sometimes could not read what their instructors wrote. Some empirical evidence has also revealed that poor handwriting is commonly identified as one of the factors that impedes student writers from effectively incorporating teacher written commentary in their subsequent revision (Ferris 1995; Huxham 2007; Lee 2008; McCune, 2004). For example, Lee (2008) studied the reactions of two groups of Hong Kong secondary students (one high English proficiency class and one low English proficiency class) to their teacher commentary. She revealed that only 2.8% of the students from the high English proficiency class and 13.6% of the students from the low English proficiency class could totally make sense of their instructors’ handwriting.

**Vague and incomprehensible comments.** Feedback receivers are often not content and feel frustrated with the feedback “where the improvement they should make was not spelt out clearly…” (Price, Handley, Millar, & O’Donovan, 2010, p. 282). Such a situation was also identified in the current study. Some interviewees reported that they found it quite difficult to address comments that were unclear and/or incomprehensible. These students generally held a very negative view toward such comments. Two particular types of feedback that my interview
participants reported to have trouble with were either short (e.g., be specific) or the comment lacking in information itself (e.g., the sentence is not clear).

In one interview with my Participant 3, while we were reading a draft done by the student, I asked him what his teacher wanted him to do with the comment that stated “what does this sentence mean?” His response was “Umm, I do not know. Actually I really do not know and it is not the first time.” Participant 3 explained that he felt that his idea was clearly conveyed in the sentence and he did not really know what he could do to respond to such a comment. He then recalled some of his experiences with the aforementioned feedback when he was studying in the ESL program. He pointed out that “Be specific” was another comment that he had difficulty with. According to him, he often obtained such an unclear comment about his essays when he was in the ESL program, but his instructor never discussed (in class) what students needed to do in order to be specific. Participant 3 felt that the instructor just expected him to know how to correct the problem by himself. However, the dilemma the student faced was that “the writing instructor wants me to be specific but I do not know how to be specific.” Although Participant 3 reported that he needed to figure out how to address comments like the one he had described, he also felt that his instructor was partially responsible for such a problem that he had encountered because the instructor also forgot to “be specific” about the message left on his draft. When asked what he normally would do with such comments, he replied, without any hesitation, that he would either delete his sentences or ignore the comments.

Similar to Participant 3, Participants 1 and 2 also found it problematic to respond to comments simply informing them that their ideas or their sentences were not clear. Participant 1 disliked unclear comments because she found them not helpful when she revised. She had this to say, “sometimes I write my points about the original essay [assigned reading], but the teacher
said ‘this sentence I do not understand’ or ‘this sentence is wrong.’ The writing instructor just
gives us ‘you got the wrong point’ but did not tell us what is wrong with it.” Having also
experienced vague comments, Participant 2 reported that she was very annoyed whenever she
received vague comments as she explained, “I feel like I put my mind and I wrote it and the idea
does not reach you [the instructor] but I understand it.” For Participant 2, she felt that what she
wrote was very clear to her; otherwise, she would not have written it. Comments without clear
and concrete guidance (such as I do not understand) did not help students understand/learn what
is wrong with her work. Instead, it created more revision roadblocks.

In addition to facing difficulty with vague comments, this particular student also
mentioned that she sometimes had trouble making sense of her teacher’s evaluation sheet which
informed her the weaknesses by only a cross mark. She found it the most difficult to deal with
when her instructor just left a cross mark on the quality of structure or the quality of the content.
For instance, in the evaluation sheet of her third essay assignment, her instructor just left a cross
mark (without any written message) to indicate her weaknesses in the introduction and in the
organization of paragraphs. Although Participant 2 understood that the symbol meant an area
that she needed to refine, she disliked receiving such meaningless feedback.

R: Do you know that there are weaknesses in these areas?
P2: Yes. For the conclusion, I know there is a weakness because I did not write any
conclusion. But for the quality of introduction, like when I read my introduction, I
could not find any mistakes, maybe just referencing. There is nothing, any comments in
this one [quality of introduction] and I do not know why there is a weakness.

Since writing an academic paper, in accordance with the norms set in Canada, was fairly
new to Participant 2 and she was still learning about the norms here, she felt that such vague
comments caused more confusion. Reflecting back to my own feedback practices, I also became
much more aware that many times I had left comments like these, simply assuming students
would understand. It was evident that without more descriptive information provided in the comments or some effective follow-up mechanisms in place, the aforementioned participants all found it very difficult to pinpoint exactly what was wrong with their writing. The pedagogical value of feedback seemed to be greatly compromised or even lost when the message was not clear and specific.

Further, throughout my interview sections with Participant 2, it was not difficult to notice that this student held a very negative view toward cryptic comments. As I had mentioned it before, Participant 2 felt extremely overwhelmed by the academic demands she faced in Canada. According to the student, she had managed her college study (taught in English) very well in her country. She had not anticipated that studying in Canada could have been so challenging. She often felt she had to put in more efforts to catch up her study here and she really did not have extra time and energies left for trying to guess what the unclear feedback actually meant. She felt that the unclear message from the instructor seemed to demand students to follow up with teachers. While she fully understood that students had to be responsible for their own learning, Participant 2 expressed that not all the students had time to go to teachers for help. This student felt that effective and useful teacher commentary should be written in a way that receivers could make sense of as well as make use of.

**Lack of knowledge and revision strategies.** Conveying effective feedback is often a very challenging task because even if teachers strive to make their written feedback as clear as possible, an array of other factors might come into play to impede its effectiveness. One of these factors identified in this study is the lack of task knowledge and revision strategies among students. Saito (1994) has noted that the difficulties student writers face with teacher commentary not only emerge from having difficulties deciphering the feedback but also stem
from lacking strategies to address the comments. Numerous studies have also confirmed that students may be aware of what their weaknesses are but lack revision strategies to effectively revise their work based on teacher feedback (Cohen, 1987; Conrad & Goldstein, 1999; Goldstein, 2004; Mutch, 2003). For instance, in the study of Goldstein and Kohls (2002, as cited in Goldstein, 2004), the researchers found that their research participants did not make any changes to her citation errors even though the teacher kept pointing out the same errors in each of her drafts. When discussing with the student, the researchers learned that the student was cognizant of the errors but did not know how to fix them properly. Thus, the student writer decided to ignore the comments. In an earlier study, Cohen (1987) conducted a survey with 217 US college students and also found that the participants seemed to know only a limited range of strategies to address their teachers’ commentary. In the present study, a number of the students reported that they did not address their teacher written commentary because they did not know what to do. For example, Participant 1 struggled with writing her summary essay. This particular student felt that she comprehended the reading well, and she believed that she also fully grasped the main ideas of the assigned text. However, she felt that it was really difficult to report the “correct” main ideas that matched her instructor’s. Facing such a difficulty, the student was not fond of the instructor’s comments, such as “you need to find the main idea” or “you got the wrong idea” on her drafts. Feeling a little bit frustrated toward such comments, the student stated that she understood the teacher’s message, but “I do not know how to fix it.” She disliked comments that informed her of something she already knew quite well; that is, the purpose of writing a summary is to report main ideas. Throughout my interview with Participant 1 about her summary writing, I found that this student firmly believed that she had included the accurate main ideas of the assigned reading in her summary assignment. The real problem she
perceived was that her interpretation of the main points did not match her instructor’s. Although she recognized that her comprehension might be inaccurate, the student stated that the comments she obtained had very little value to guide her to rework her summary because she could not write something if she did not even know what it was. In other words, she did not know how to locate the “right” main points of the reading text. As there was never a discussion about the assigned reading in class, Participant 1 struggled with her summary assignment. The only strategy Participant 1 knew of was to reread the assigned text several times. She did not know what else she could do with such an issue. Examining the student’s summary essay drafts, I agreed with her instructor that the student did not comprehend the reading text. However, I wondered if repeatedly telling the student that she did not locate the main idea or she had to report the main findings was a sound feedback practice. As the student attempted three times in her summary writing, she never seemed once to grasp the main points.

Participant 9 reported that it was quite difficult for him when the instructor’s feedback informed him to draw more evidence from the assigned readings to support his claims. Even though the instructor would sometimes provide him comments with hints of which text or which paragraph to look at for the information, occasionally he would still find himself not being able to locate relevant information after following the instructions. He often did not know what else he could do to resolve the issue. Rather than consulting with his teacher, he would “just give up” (Participant 9). In fact, Participant 9 is not the only one who expressed difficulty when asked to add additional information to their texts; several other participants also found it quite difficult to effectively respond to feedback that required them to incorporate more external sources in their writing. For instance, Participant 6 indicated that he had difficulty with drawing relevant information from the reading text to support his claim and oftentimes, the student would just
ignore such comments. Blaming his weak reading ability as part of the problem, Participant 6 also justified his action by saying that “I wanted to find more information but she [the writing instructor] just gave us two materials and I think the content for these two materials is insufficient.” The student thought that the assigned reading texts contained a very small amount of information, which disallowed him to find relevant ideas for his claims. Overall, lacking knowledge and strategies to address comments can pose a barrier during one’s revision process; feeling one’s ideas are being misinterpreted can also minimize student writers’ efforts to revise.

**Appropriation.** As mentioned in the literature review section, potential text appropriation occurs when instructors simply make comments without fully knowing the actual intentions of students (Brannon & Knoblauch, 1982). In the present study, although none of the 14 interviewees mentioned the word “appropriation”, some participants expressed the idea that their instructors sometimes did not seem to fully understand their ideas and would just change their points. However, the change might not match the student’s original intention. For instance, Participant 7 described her experiences with various teachers adopting different feedback approaches to help her improve her ideas and she also talked about her own preferred feedback approach. She stated that

> When I was in the ESL for the first semester, every idea I wrote the writing instructor would think that I had a great idea and it is very different from others. When the writing instructor saw my explanation, the writing instructor would say it should not [be] explain[ed] in such a way. The writing instructor would just keep my topic sentences and then would correct the rest. The instructor would correct all of my information and I was very disappointed about that.

The student then described her experience in the university writing courses. She said,

> However, when I was in Eng 102F and Eng 1020, the teachers would ask me what I was trying to say and then she/he would help me to write it in English way. I can feel that it is [was] still what I want[ed] to convey but it is[was] written for Canadian people [to understand it easily]. My ESL teacher listened to my idea, but changed a lot of my
ideas. For my university courses, I find a lot of teachers pay high respect to my ideas and they helped me to make my ideas better.

Although the student still thought highly of all of her English instructors, it was not difficult to detect her sense of disappointment when she talked about how her so-called great ideas were completely transformed into new ones to fit into “English logic.” The student reported that she wanted to learn English logic in order to produce a well-written text. She would have much preferred teachers providing guidance to help her reformulate her thoughts, instead of taking over her learning process. While most of the participants would follow their instructor’s suggestions and make changes, some claimed that they would keep their original ideas in the papers even when their ideas were weak or wrong from their teacher’s perspective. For example, Participant 9 had been keen on addressing his teacher’s comments for his first and second essay assignments, but he revised very little in his third assignment – a research paper on the topic of Wikipedia. He was asked why he made no changes between drafts; one of the reasons he provided was that he did not think his teacher understood/knew his intentions. He felt that how he had structured his research paper made perfect sense. According to him, his intention was to arrange one paragraph discussing advantages of Wikipedia, another paragraph discussing disadvantages of Wikipedia, and the third paragraph discussing possible solutions to mitigate the impact of the disadvantages. The following text for discussion is taken from the paragraph in which he concentrated on disadvantages.

Participant 9’s text: In addition, it is hard to determine the credibility of online information, especially to young people, because they said that sometimes they were not concerned with trustworthiness beyond meeting these requirement[s] of their assignments (Mechen-Trvvino & Hargittai, 2010).
His instructor’s comment was that “This does not seem to fit here.” Yet, in his revision, Participant 9 still kept the same information without making any changes. He stated,

P9: I think I should keep this information here because in this paragraph, I want to say some negative things about Wikipedia and I think that is the one negative thing about Wikipedia and I think I should keep this information here. But my instructor talked to me that maybe that is not the main point and main thing I should say here. I think that’s the way.  
R: Did you talk to the writing instructor?  
P9: Yeah, I talked to her and I think this information is [the] one negative thing about Wikipedia and in this paragraph, I said all the negative things about Wikipedia and I think I should keep that but she told me that that was a small aspect for the negative thing about Wikipedia. I should find other main points and main negative thing about Wikipedia. In this paragraph, I want to include all the negative things.

I noted that Participant 9 indeed recognized he needed to follow his teacher’s comments, but he also felt that he had the right to decide how he wanted to place his ideas in his writing. This particular student showed his sense of ownership of his text as he claimed, “I think if I follow the recommendation from my instructor, I will get a higher mark in the next draft but sometimes I think if my opinion is right, it does not matter whether or not I get a higher mark and I should keep my opinion.”

Participant 2 also had a similar experience and decided to leave some of the original texts unrevised as she did not agree with the comment.

Her original text: According to Dempsey, she lived in the school for eight years although she could see her house from the windows of the school and not being able to see her parents except during the summer holiday. She stated that life at school was filthy, food was awful, discipline was strict, diseases were widespread and a lot of physical punishment was happening. *Discipline was strict and all students were forced to hard work in the staff home, chapel, laundry room, and school compound.*

The instructor’s comments (see the above portion in italics): This repeats some of what was said in the previous sentence. The teacher also changed “Discipline was strict” to “Students had to obey a strict schedule.”
Below is our conversation about how Participant 2 felt about her instructor’s feedback.

R: What did she say?
P2: This repeated what I already said.
R: What do you think she wanted you to do?
P2: Just write one line for both and do not repeat key words again.
R: For you these are two different things?
P2: Yeah. Because I am just saying that what Dempsey thinks about the school and here [the student meant the last sentence] I am just giving specific about this plan [from the interview, I got the sense that the student meant that she was trying to provide an example of what happened at school.]
R: Did you discuss with your teacher?
P: Yes, I did. She said like try to be general and to avoid Arabic thing but I also do not know how to write it or how to explain it in words.

Without listening to Participant 2’s points of view, I would also agree with the teacher that there was a repetition in her text and I could not follow her thoughts. However, after listening to the participant’s points of view, I wondered if there were better ways to help students in this regard. Instead of insisting on students finding another main point, would it be much more beneficial to help students to rephrase these statements so that they could work them into the paragraph? Instead of finding another idea, students might have just needed to add clarifications or transitions to make their statement work in their text. Below is an example of adding clarifications to make her ideas work in the paragraph. The added clarification section is in italics.

According to Dempsey, she lived in the school for eight years although she could see her house from the windows of the school and not being able to see her parents except during the summer holiday. She stated that life at school was filthy, food was awful, discipline was strict, diseases were widespread and a lot of physical punishment was happening. Dempsey then provided a concrete example of what went on in school. Students had to obey a stick schedule and all students were forced to hard work in the staff home, chapel, laundry room and school compound. (Participant 2’s original text with the researcher’s modification).
Having insufficient feedback. In the context of multiple-draft writing instruction, students are often required to revise each draft based on teacher commentary. Since the purpose of multiple drafts is to engage student writers in rethinking their ideas, seeking better ways to express their thoughts (Goldstein & Carr, 1996), and taking advantage of numerous opportunities to detect and eliminate surface weaknesses, students usually need guidance along the way regarding what they have done so that they can work on weaker areas. It becomes problematic when student writers obtain only one particular type of feedback about their writing, and it poses a potential barrier for at least some students because they often do not know what to work on in their revision. As discussed before, four participants, in the same composition course, received only grammar related feedback and the correction were already supplied in the feedback. None of them perceived themselves as good writers in English and they felt that composing in English was quite challenging. They all individually expressed their revision concerns about not knowing what to do with other aspects of their papers and their needs for other kinds of feedback so that they could improve themselves in these areas. My examination of the written drafts of these students also confirmed that most of the written comments centred on grammatical corrections; a few might be on lexical concerns. No feedback on other aspects of the papers, such as the content and the organization, was provided. Surprisingly, in the very first interview, each of these four participants reported that they were informed that the evaluation of the first draft would be focused on the content and the organization of the essay. In the second draft, much more attention would be allocated to the grammar aspect and all aspects would be evaluated in the final evaluation. The fact that seldom could one find feedback other than grammatical corrections on all drafts showed a disparity between what the instructors told the
students about how their papers would be evaluated and what the papers were actually being evaluated on.

Among the four students who only received grammar-related feedback, at least three of them somewhat felt that they also needed to make revision changes in other aspects of their papers since they had to rework the drafts three times. In the first interview, Participant 10 reported that the biggest challenge she faced in English writing was not knowing the exact organization of different essay genres. She reported that “just one score and some corrections of the words and sentences” did not provide her with any information that she could work with to make revision changes in her organization. Other than relying on her instinct, she did not feel that she could make any meaningful changes or further improvement on the organization. The revision process became quite trivia as she mostly copied what was left on her draft. When asked what kind of difficulties she faced in revision, Participant 12 always gave a consistent response; that is, “The teacher did not write an overall comment in my essay so it is hard to revise.” As she was still learning to acquire academic literary skills and to figure out the norms, it was understandable that she needed to rely more on her instructor’s feedback to show her the disparity between what she knew and what she needed to learn more about. Without this kind of guidance, she was lost and agitated whenever she had to revise.

Participant 14 was also very confused about what revision changes he could make in order to improve his paper. As mentioned earlier, when he revised, he just read his essay again and if he found something weird, he would attempt to fix it. He found reworking his drafts, especially the third time, quite difficult and boring because he often would not find anything weird in his draft on his own. Since he did not really know what to do with his final draft of revision, revising, like how Participant 10 felt, became a repetitive process. Overall, having too
much feedback might overwhelm students (Hartshorn, Evans, Merrill, Sudweeks & Anderson, 2010), but having no feedback can also lead to students encountering revision challenges. In addition, revising one’s paper takes time. Not being given sufficient time to rework their papers can also minimize students’ revision efforts.

**Time constraints.** Many scholars and teachers have agreed that providing comments on students’ work is time consuming, but deciphering and incorporating teacher feedback into subsequent drafts also takes time. Kietlinska (2006) along with other ESL experts notes that time can play a critical role in the effectiveness of revision among ESL students. In my study, 12 participants expressed facing the challenge of short turn-around time between drafts. Having limited time between drafts sometimes disallowed them to spend sufficient time revising their drafts. Participant 9 generally seemed to be keen on revising his work based on his teacher’s recommendations. He revised very little for his third essay assignment – a research paper. While he did not agree with the teacher’s suggestions and he experienced some difficulty structuring his research paper, lacking time also played a role. For example, one of the comments his teacher provided in his first draft of essay 3 required him to incorporate and discuss some of the findings from one of the assigned articles. To address his teacher’s comments, he would have to spend more time rereading the article and deciding what to include and all these tasks would take some time. He admitted that he did not attempt to revise it as he was only given 2 days to revise, which he felt the time given was not sufficient.

The same student further mentioned that the English composition course was not the only course he took during the semester. When he was asked to work on his research paper, it was close to the end of the semester. Facing fast approaching examinations, the student had been very busy preparing for all of the examinations as well as finishing up with the course
assignments of other courses. He felt that having just two days for revision was inadequate for him to revise his drafts properly even though he fully understood the feedback. Below is an excerpt from our conversation.

R: What I heard from you is that if today you have one week turn over instead of a couple of days, you would have spent more time to address some of the comments?
P9: Yeah, you know for this essay, it is the most difficult essay and it is the longest essay I should do in English 1020 so I need more time than other essays and to have sufficient time to address the comments.

Participant 8 also experienced a similar situation. For each of her English essay assignments, she claimed that she generally had two days to revise for each draft. Sometimes she might have a little bit longer if her instructor returned the draft on Wednesday and her following class would be on Monday. She found it unreasonable to expect her to revise her second draft of the research paper in only two days. Eventually, she had to ask for a one-day extension from her composition instructor. Taking five courses in one semester and also having to finish assignments for other courses, Participant 8 felt overwhelmed by the workload. Like Participant 9, Participant 8 also felt that writing a research paper was the most challenging of all. As she recognized that she did not do well in her in-class draft at all, she wanted to put in more efforts to bring the mark up but being given only two days to revise was insufficient.

ESL students need time to process and revise. Raimes (2001) states, “ESL writers need more of everything: more time, more opportunity to talk, listen, read and write in order to marshal the vocabulary they need to make their own background knowledge accessible to them in their L2” (p. 55). Some of the participants involved did not seem to be given enough time to digest and to utilize the feedback. The pedagogical value of process writing seemed to be demolished when students were being rushed to meet the deadline, instead of having time to reflect on what they had written and think of ways to make it better.
Perhaps because of the time constraints, I also found a number of participants were very strategic about how they should manage their academic workloads by prioritizing the tasks.

When asked why he did not spend time revising his essay drafts, Participant 4 responded that he had read and understood his teacher’s comments, but “I think I should spend more time on other courses and do not have so many time to write a better one” (Participant 4).

R: Why did you spend more time on other courses but not your English course?
P 4: I think there are so many reasons because maybe other assignments are more difficult for me and the requirements are more challenging. I think I can do this very well so I just put it last in my schedule. Another reason is that the mark in every assignment is not that big and maybe one assignment is just 5 marks and that’s why I did not, if the time is conflict with other assignment, I will focus on other assignments because other assignment is 20 marks or more.

Similar to Participant 4, Participant 6 also did not revise any content related feedback and he never hid this fact during the interviews. Analyzing his interview transcripts, his personal belief of what the course was about certainly influenced his revision behaviour. I also believed that the evaluation criteria set for this course to some extent influenced his decision on how he would approach his essay assignments as he stated,

You know these 2 essays are 30% of the entire course. Three grammar tests, 15% each and word test 10% and the final 25%. You know the grammar and the word occupy half of the grade of the course and if you get a 50, you can pass the course.

Participant 6 firmly believed that if he performed well on all the tests for the course, he could pass the course easily. In addition, this course which Participant 6 was assigned to take is not a credit course. On the transcript, it would only show if students passed or failed without any marks. Therefore, having a higher mark or just a 50 meant the same from the perspective of Participant 6.

In summary, ESL students involved in this study generally held a quite positive view toward process writing pedagogy. More positive statements were identified than negative ones.
toward such a teaching approach. Such a positive finding is quite encouraging for teachers who are adopting process writing pedagogy because to make any pedagogy effective, learners have to believe in the pedagogy that instructors are trying to engage them in. While it is good to learn that students seemed to accept the value of such pedagogy, it is also important to identify their difficulties with revision, the core of process writing. In the study, my participants reported experiencing numerous challenges when responding to their teacher commentary. These challenges include illegible handwriting, vague and incomprehensible comments, lacking of knowledge and strategies to address comments, students’ ideas being changed, not having sufficient feedback, and not having sufficient time to revise. These challenges are also believed to potentially influence students’ revision decisions; that is, not to make any revision changes or just to make superficial changes.

Discussion

Teacher commentary is one of the most common forms of feedback on students’ learning performance in educational contexts (Hattie & Timperley, 2007) because it often informs learners not only what they have done well but also what they have yet to accomplish. It is also viewed as “a key element of the students’ growing control over composing skills” (Hyland & Hyland, 2006, p. 1). In fact, providing feedback and responding to feedback are two very complex tasks. While teacher feedback has its pedagogical value to guide students’ learning, “the crux of the matter is how students interpret and use feedback” (Carless, Salter, Yang, & Lam, 2010, p. 396). In my study, the collected data revealed that most students seemed to read and value teacher commentary, but it was also evident that not all of the students could always make sense of what their instructor left on their essays, which is one of the often cited feedback challenges in the literature (Ferris, 2003; Weaver, 2006). As long as handwritten comments are
provided, there is always a danger of students not being able to read them. To ensure written feedback useful to feedback recipients, writing instructors should consider incorporating other tools to help mitigate this potential threat. Overall, it is not unusual for instructors to remind students to make their handwriting legible for their assignments and examinations. Equally important, the same expectation will also need to apply to instructors’ feedback practices to better ensure the readability of the written feedback. After all, teacher feedback can only be helpful to students when the intended recipients clearly receive and understand the messages. Second, providing feedback on student work is a complex task (Yeh & Lo, 2009) and Elbow (1999) has called such a task “a dubious and difficult enterprise” (p. 200). Even if teachers are aware of common feedback issues and strive to make their comments clear, it is still possible that receivers may not understand, may not know how to revise and may feel that their ideas have been misinterpreted and/or disregarded, which are the challenges uncovered in this study. In the current study, I discovered that many of my participants seemed to view teacher feedback as a one-way traffic. They expected instructors to be specific about their comments so that they would know what to do in their revision. I also noticed that very few discussions or training on how to respond to teacher comments seemed to take place in these writing courses. Reflecting on my own teaching approach, I had also never spent time discussing with my students regarding what I expected them to do with my comments. This finding supports Weaver’s (2006) claim that students seemed to hardly receive any training in how to effectively utilize feedback. My findings highlight a need for process-writing instructors to include lessons that focus on enhancing students’ competency in addressing teacher commentaries and in revising. As illustrated in the study, at least four interview students were found quite perplexed regarding what they were supposed to do in their revision. They were uncertain if they needed to focus
content-related changes or grammatical-related changes. It is essential that guidance on how to use teacher feedback and how to approach revision tasks be incorporated into the course curriculum (Amrhein & Nassaji, 2010; Ferris, 2003; Mutch, 2003; Weaver, 2006) for process writing composition classes. If such a discussion or training is ignored in the course design, more carefully crafted teacher feedback alone is still insufficient to help students improve learning. As Mutch (2003) remarks, “well-meaning attempts to engage in conversation with students may founder if students have not been prepared to engage with such comments” (p. 25).

Equally important, to avoid confusing students, instructors need to be consistent with what they tell the students about how their papers will be evaluated. In the study, four interview participants were informed how each of their essay drafts would be evaluated, but all of them only obtained feedback on the surface features of their text. Although some L2 writing studies have shown evidence that L2 writers welcome and long for error correction feedback (Ferris 1999; Leki 1991; Wang & Wu, 2012), my finding has shown that a majority of the students (12 out of 14) also wanted content and organization related feedback and some of the students found these areas most difficult to tackle on their own. For instance, among these four interview participants who only received grammar feedback, they all voiced their need for feedback on other aspects of their papers. While some students did not mind too much, all of them would have been better supported to develop and strengthen their writing competency had content and organizational feedback been supplied, especially when most of them recognized and mentioned that these were the areas that they often did not possess much knowledge about. Thus, they often felt a sense of helplessness when they had to work on these areas alone. It does not seem to be pedagogical fair to expect these students to learn the structure and features of L2 texts without any direct guidance initially.
Analyzing students’ written samples and interviewing students, I found that most of my participants’ instructors utilized handwritten feedback as the sole feedback approach on the students’ work although these instructors welcomed and encouraged students to request a meeting whenever students had questions. My own teaching experience and my conversations with two instructors also confirmed that very few students would avail of this service since it was not mandatory for them to meet the instructors during office hours. In my class observations, I noted that although one of the instructors I observed utilized peer feedback in her class; however, I found several of the students were actually doing tasks (texting, chatting) other than commenting on their peer’s text. It is beyond the scope of the study to determine why the writing instructors only utilized hand written feedback without actually interviewing all the writing instructors who taught during the semesters when the study was conducted. For myself, I have realized how little feedback-related training I obtained and how little information I knew about effective feedback practices. I believe that my insufficient knowledge of feedback approaches and of feedback issues might also play a role in the teaching issue I encountered. Process writing instructors may need to familiarize themselves with current feedback studies in order to enhance their feedback practices. They may also need to learn about various feedback approaches and how these approaches can be utilized to complement one another.

Finally, to better understand the complexity of teacher feedback and student response, future researchers will need to include writing instructors in their research designs and to examine their knowledge of feedback practices and feedback approaches. This line of inquiry is important because it may help better capture the complexity of feedback practices and revision acts. In this study, I did not know why one particular instructor who chose to provide grammar related feedback demonstrated a different feedback pattern than what the instructor had told the
students. Perhaps the instructor thought that the enhancement in grammatical knowledge was exactly what the students needed to improve in their writing. It is also possible that the instructor was not aware that there was a disparity between what he/she thought he/she did and what he/she actually did. No matter what the finding is, each scenario would yield a very different insight for teacher feedback practices. Including teachers’ views on their feedback practices can also be useful to inform the educational institutions what particular types of professional development the instructors may need to enhance their competence of feedback practices. If the findings indicate that there are some systemic constraints that disallow instructors to utilize feedback effectively, such as larger class size, different types of intervention may need to be in place so that teaching and learning can be enhanced.

**Lessons Learned from the Research Journey**

Prior to this research journey, I simply assumed that students did not revise their papers because they disliked process writing pedagogy. I have since learned from my interviewees that most of them, if not all, saw the value of reworking on their papers in order to improve their writing competency. There are some deeper factors surrounding this teaching issue. Since this research journey, I have made some changes in my teaching approaches. First, I have learned that topics, like how to address teacher commentaries and how to revise, cannot be overlooked in our lesson plans. In the multiple-draft writing classroom, reworking the drafts is often essential and expected. Knowing how and what to revise becomes very important; especially the quality of these students’ written texts is often evaluated on the quality of each revision. Neither of the two instructors I observed allocated any class time to addressing questions, such as why revision was important, how one could rework one’s written work, or what one could do when encountering difficulties during the revising process. Reflecting on my own teaching practices, I
had also not paid much attention to revision in any of my lesson plans. I just assumed that
revision problems, if any, started from the students.

Participant 12’s statement that “I do have some trouble with writing revision because I do
not know I should just correct the mistakes or you know just like the organization be better or
add some new ideas or change some sentences…” painted a picture of the confusing and helpless
learning context we seemed to unintentionally set up for these students. As also discussed in the
previous section, some students in the study also grappled with decoding instructors’ unclear
comments, such as “be specific”, “avoid repetition”, and “you have the wrong idea”. Little
guidance or information was provided to make these terms clear to the students.

I have since incorporated a class discussion of feedback in the beginning of each semester.
In the discussion, students are encouraged to share their common practices with teacher
commentaries. I also discuss with my students about my expectation of what they should do
with my feedback. We talk about the limitations of written commentaries and what they should
do when they do not understand or do not agree with the comments. This discussion also
provides me a chance to elicit information from my students about their needs and wants of
feedback. Although I still face some students who tend not to revise or revise superficially, I
have also noticed that many more students come forward and ask for clarifications about my
comments or explain to me why I have misunderstood their points or why they disagree with
some of my comments. I think this active learning, like taking ownership of their own learning
and defending their points with reasons, will allow my students to obtain more benefits from
feedback than just passively accepting teacher commentaries.

Second, I have taken a much more active role in learning other types of feedback.
Although I still leave handwritten comments on my students’ in-class drafts, I have also utilized
the Microsoft Word review functionality to make comments on my students’ subsequent drafts to avoid illegible issues. Since these electronic feedback files can be easily saved, I have also begun to keep a feedback file of each student. I have found that these files are quite useful for me to trace common weaknesses of each student. So when students come to meet with me in my office, I can work with each individual for his/her specific issues. These files are also useful to help me plan a class discussion or a revision workshop on common problems with concrete examples.

Third, I have allowed more time between drafts. My study identifies that being given limited time to revise between drafts has dissuaded some participants from revising. Writing up this study report and revising numerous drafts along the way, I have to admit revising is not as easy as simply addressing the comments left on one’s written work. Revising sometimes can be time-consuming and cannot be rushed. A short turn around time seems to potentially restrict students in rethinking their work and coming up with better ways to express their ideas. Now, when I assign the time between drafts, I am very aware of the potential disadvantages associated with a short turn around time. I feel it is important to allocate at least a week between drafts. I have also allocated some class time to allow my students to revise their drafts in class so that we can go through common problem areas in class and I can show how each area can be improved. Students are also invited to contribute their ideas on how they would revise each weakness. Collectively, we learn how to make revision changes but also gather different revision approaches/strategies.

Finally, I have taken a more active role in learning other types of feedback approaches in order to complement written feedback. For instance, I have learned that audio feedback has its potential to eliminate the issue of illegible written messages but also enable the teacher to
provide much more detailed information about their feedback (Lunt & Curran, 2009). Peer feedback with proper in-class training instruction and guidance enables student writers to foster a sense of audience (Rollison, 2005), obtain feedback from various readers and negotiate/clarify their meanings during the interaction (Hyland and Hyland, 2006), and to practice evaluation skills (Tang & Tithecott, 1999). To provide effective feedback, writing instructors may need to become familiar with other types of feedback approaches and the strengths and weaknesses of each type.

**Conclusion**

To sum up, teacher feedback has pedagogical value to facilitate students’ learning (Carless, Salter, Yang, & Lam, 2011; Hyland & Hyland, 2006). Especially in the context of process writing pedagogy, the provision of written feedback is “the single most important element for successful development in learner’s writing” (Storch, 2009, p. 116). However, providing sound teacher feedback is not an easy task. Similarly, incorporating teachers’ suggestions into one’s writing can also be very challenging. As many students expressed difficulty with making sense of the instructor’s handwriting, it is recommended that instructors who often provide written comments consider utilizing other tools to make their messages legible. There also seems to be a need to establish the means in class to train students how to use feedback effectively as well as to openly discuss how to utilize teacher feedback and what one should do during the revision process. It is also recommended that instructors incorporate various types of feedback approaches to better meet diverse needs, to allow students sufficient time as well as to better support students to become competent in revising their own work.
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http://dx.doi.org/10.1016/S1060-3743(99)80126-X


doi:10.1080/14623940802431465


http://dx.doi.org/10.1016/S1060-3743(99)80110-6


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   Spending a substantial amount of time in a setting and developing significant trust relationships with participants can be vital in obtaining in-depth qualitative data. Sometimes regardless of the time spent in the setting, the direct presence of an adult attempting to collect interactive data can alter the authentic behaviors of children. This dilemma can be exacerbated in sporting environments as children are constantly moving during physical activity participation. In this presentation the authors will address positive and negative outcomes of using a GoPro camera worn by children ages 9-10 during a Sport Education unit of instruction. The overall goal of this project was to examine inter-student learning via bodily actions and dialogue to determine performance inhibitors and motivators. Data collection will include videotaped lessons, participant interviews, observations, and field notes. For the purpose of this presentation, methodological implications specifically concerning researcher and participant perceptions of using the GoPro technology will be discussed.

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Abstract: The early years of schooling are both foundational and formative. For many children this is a time of discovery and the first step away from their home environment. Early childhood teachers have a responsibility to encourage the learning and skill development of a highly diverse and often highly emotional cohort. Being away from the nuclear family for the first time and developing new relationships with teachers, peers and other parents adds a unique dimension to the learning environment for early childhood educators. In situation where a child is coming from a home environment that is under duress and associated high levels of stress, substantial challenges to bonding with peers and teachers exist and are often overlooked as part of the learning process. This paper presents an introduction to a research project being conducted to examine the association between environmental stress, the physiological effects of stress through measurements of cortisol and oxytocin levels, the influence of genetic polymorphism in relation to sensitivity to oxytocin and the quality of learning outcomes for students entering the first year of formal schooling. The study will combine empirical evidence in relation to physiological processes in the child participants, collected via analysis of samples of hair, fingernails and mouth swabs, and mouth wash in parents and teachers, and qualitative data analysis techniques from parents and teachers. The study will enhance the understanding of the interrelationships of the factors that influence the quality of outcomes for children as they enter formal schooling for the first time.

Introduction

Since the early 19th century in accordance with the changes that were made in the Industrial revolution, widespread formalised education was developed. Education at this time was originally devised to train people for industrial work. In the process, the home, workplace, community life and the church were separated from many of the contributions that they made to a wholistic educational process. Only a special few students were able to dream of accessing university to obtain a tertiary qualification. Even in early 21st century
only 28% of the Australian population possessed a Bachelor’s degree when the global and economic conditions indicated that a level of 40% was necessary to remain economically viable on a global level (Bradley, Noonan, & Scales, 2008).

Since those early days of widespread formalised education, new ideas have emerged and over the years education progressed from a transmission teacher-centric environment, where little differentiation in teaching pedagogy based on individual difference was evidenced, to a holistic student-centred one, where the educational experience is adapted to the needs of the individual. This paper presents the initial theoretical background of a research project that will continue this evolution through an investigation of the relationship of physiological factors that influence the capacity of children entering formal schooling for the first time to bond with teachers and care-givers and the influence this has on early childhood education. A theoretical model describing the influence of the hormones oxytocin and cortisol on bonding and early learning in children suffering high levels of stress and the associated research methodology for the study will be presented.

**Cortisol and child development**

Cortisol, a hormone released by the adrenal gland, is essential to the maintenance of homeostasis within the body and plays an important role in stress, anxiety and depression (Kino, Vottero, Charmandari, & Chrousos, 2002; Sharpley, McFarlane, & Slominski, 2012). Often referred to as the stress hormone, cortisol influences, regulates and moderates many of the changes that occur in the body in response to stress, including blood glucose levels, blood pressure, immune responses and central nervous system activation. However, in circumstances where the body is placed in a continual stressful state, particularly early in life, the cortisol and related corticosteroids released may have damaging effects on the body, including reducing cognitive function, memory and self-regulation (Hunter & McEwen, 2013). It may also produce maladaptive effects on the brain that influence lifelong patterns of emotionality and stress responsiveness (McEwen, 2007). Monk, Georgieff and Osterholm (2013) argue that these maladaptive effects may also be caused by the prenatal environment where the mother is subject to high levels of psychosocial distress and/or malnutrition. Karlen, et. al. (2013) supported this view by reporting a correlation between the cortisol levels in hair for prenatal women and that of their off-spring at 1 and 3 years after birth. It has also been demonstrated that high levels of stress in children’s early years of life, such as ongoing verbal and physical aggression between parents, higher levels of chaos in the household and higher levels of poverty were “key contributors to 58-month-olds’ ability to recognise and modulate negative emotion” (Raver, Blair, & Garrett-Peters, 2014, p. 1). This strong link between early childhood experiences and later behavioural outcomes is explained by the underpinning stress responsiveness identified above.

Shonkoff et. al. (2012), in a report from the American Academy of Paediatrics, proposed that investment in interventions that reduce adversity for young children will have comparable outcomes for society to those benefits available through educational interventions. They propose the model shown in Figure 1 (p. e234) as a theoretical
framework for understanding the causal effects that childhood adversity has on lifelong health and wellbeing.

The model proposes that an adverse social and physical environment causes physiological adaptations and disruptions at the genetic level. This in turn causes changes in learning capacity, behaviour and physical and mental well-being. The adverse effects on health caused by this genetic adaptation appear to arise from the “gene-environment interplay, resulting in epigenetically regulated differences in gene expression” (Boyce, 2014, p. 102). Evidence has also been identified supporting the view that these epigenetic effects are able to be passed from one generation to the next (Jablonka & Raz, 2009).

The influence of adversity in early childhood on its own is not sufficient to guarantee that the health of the child will be adversely affected. Sims (2011) proposes that “positive, nurturing environments and secure attachments between an infant and caregivers, play a protective role in children’s health” (p. 2). The American Academy of Paediatrics (Garner et al., 2012) support this view and recognise:

that it is not adversity alone that predicts poor outcomes. It is the absence or insufficiency of protective relationships that reinforce healthy adaptations to stress, which, in the presence of significant adversity, leads to disruptive physiologic responses (ie. toxic stress) that produce ‘biological memories’ (p. e225).

Davidson and McEwen (2012) also argue that the damage caused by adversity and stress in early childhood is able to be repaired. They propose that, although the precise mechanisms of brain plasticity are not fully understood, training activities such as cognitive
therapy and meditation positively influence prosocial characteristics. Hunter and McEwen (2013) propose that the “brain possesses a life-long capacity for reversible, structural plasticity” (p. 177). This is reinforced by studies demonstrating the quality of the child rearing environment impacts on children’s cortisol levels. For example, in a study examining the influence of the quality of child care on saliva cortisol levels, Guilfoyle and Sims (2011) demonstrated that the cortisol levels of those children in high quality child care reduced over the time the child was in care, while those in poor quality child care demonstrated an increase in cortisol levels. Perry (2009) proposes that the neural networks in children (and adults) undergo use-dependent changes that result in either positive or negative adaptations, depending on the environment. He argues that the negative adaptations that result from an ongoing toxic stress environment are able to be modified through the use of repetitive and appropriately sequenced positive activations of the neural system in appropriately supported interventions.

The literature examined establishes a clear link between the experience of toxic stress in prenatal and early childhood with higher cortisol levels and epigenetic influences on mental and emotional function and subsequent behaviour and learning capacity. There is also evidence that the plasticity of the human brain means that these epigenetic influences are able to be reversed through appropriate practices and experiences, although the extent of that potential reversal is still to be understood.

**The role of oxytocin in bonding**

Oxytocin is a hormone produced in the hypothalamus and is released into the circulatory system via the posterior pituitary gland where it binds to oxytocin receptors to influence behaviour and physiology (DeAngelis, 2008). It has been proposed that the hormone is released by environmental stimuli, including smell, sound and light and through physiological stimuli, such as touch (Uvnas-Moberg & Petersson, 2005). One key role oxytocin plays in women is its driving of both the increased contraction of the womb during labour and contraction of the myoepithelial cells in the mammary glands to eject milk into the ducts of the breasts (milk let down reflex). In addition, the hormone has also been linked to attachment behaviours and bonding between mother and child. Olff et al (2013) note that “these physiological effects [of oxytocin] are mechanistically linked to regulating attachment behaviours, since these early critical periods represent privileged times during which mothers bond with their offspring, and newly born infants collect information about safety and threat in their environment” (p. 1884).

The relationship between safety, threat and social attachment between mother and child has been modelled by Carter (1998, p. 784) as shown in Figure 2.
In this model, positive social interactions that support social bonding are proposed as reducing the sense of isolation, anxiety and stress, while experiences of negative social interactions lead to increases in these factors. Carter also proposed that hormones, including oxytocin, “have been implicated in the induction of maternal behaviour and maternal attachment” (p. 782). This is illustrated by a study in the 1990’s that compared breast and bottle fed babies: breast feeding mothers were calmer in the face of certain stresses (Mezzacappa, 2004) suggesting a strong link between oxytocin (as generated by breast feeding) and maternal stress reactivity.

Researchers has been trying to determine the role of oxytocin in social interactions and specifically bonding in recent years. Olff et al (2013, p. 1891) propose the model shown in Figure 3 to explain the role of oxytocin in social salience, stress responses and social bonding.
Olff et al (2013) identify interindividual factors and contextual cues as having an effect on social bonding and stress regulation, moderated by the presence of oxytocin. In particular, oxytocin is presented as having differential effects depending on the person and the situation involved. If there are no major stresses or trauma, either in the past and/or present, oxytocin apparently behaves as a prosocial, bonding and comforting addition to the system. In cases where there are additional stressors and previous or current trauma occurring, it seems to add to the negative, fearful and nontrusting processes that a stranger environment may bring to the surface. Olff et al (2013) noted that “when social clues in the environment are interpreted as ‘safe’ oxytocin may promote prosociality but when the social clues are interpreted as ‘unsafe’ oxytocin may promote more defensive and, in effect ‘anti-social’ emotions and behaviours” (p. 1883).

The proposal that high levels of oxytocin have the capacity to influence the sensitivity to emotions in others was demonstrated in a recent study by Cardoso, Ellenbogen and Linnen (Cardoso, Ellenbogen, & Linnen, 2014). In the study, healthy young adults prescribed oxytocin were found to become oversensitive to the emotions of others and it was concluded that the study supported “growing literature showing that the effects of intranasal oxytocin on social cognition can be negative under certain circumstances, in this case promoting ‘oversensitivity’ to emotion in faces in healthy people” (p. 43). De Dreu, Greer, Van Kleef, Shalvi and Handgraff (2011), demonstrated that oxytocin also promoted intergroup bias through the promotion of in-group favouritism and out-group derogation. The researchers explicitly questioned “the view of oxytocin as an indiscriminate ‘love drug’ or ‘cuddle chemical’” (p. 1262).

Research has demonstrated that individuals demonstrate differential sensitivity to oxytocin due to a genetic polymorphism of the oxytocin receptor gene (OXTR) (Rodrigues, Saslow, Garcia, John, & Keltner, 2009). This polymorphism has been implicated in autism in children from a Caucasian background (Jacob et al., 2007). Studies have demonstrated associations between different oxytocin receptor gene (OXTR) variants and IQ, daily life skills and a number of affective characteristics, such as emotional loneliness (Lerer et al., 2007; Lucht et al., 2009).

The literature reviewed demonstrates that oxytocin has a substantial role to play in the experience of young children entering child care or school for the first time. This first separation of the child from the home environment will represent a very stressful period in the life of most children in its own right. The potential exists for this experience to accentuate existing toxic stress situations, or to introduce such a situation into the life of the child for the first time. Oxytocin appears to have the capacity to exacerbate the effects of either negative or positive emotional and social interactions. A child whose home environment is characterised by stress and perceptions of danger and who also has high levels of oxytocin would be expected to demonstrate behavioural and emotional problems, difficulty
in relating socially to peers and teachers and a heightened sensitivity to the emotional experience of the introduction to schooling.

**The caregiver (teacher) role in early learning**

The Australian Government report on the early years learning framework, Belonging, Being & Becoming: The Early Years Learning Framework for Australia, (Australian Government Department of Education Employment and Workplace Relations, 2009) describes the recommended teaching pedagogy to maximise the potential for all young children and takes a particular focus on the important role of social interrelationships. The report notes that

Educators’ practices and the relationships they form with children and families have a significant effect on children’s involvement and success in learning. Children thrive when families and educators work together in partnership to support young children’s learning. Children’s early learning influences their life chances. Wellbeing and a strong sense of connection, optimism and engagement enable children to develop a positive attitude to learning. (p. 9)

The report identifies the learning outcomes from birth to age five age range as being that children develop:

- A strong sense of identity
- Connections and contributions to their world
- A strong sense of wellbeing
- As confident and involved learners
- Effective communication

Learning in relation to these outcomes is identified as being influenced by “educators’ practices and the early childhood environment” (p. 19).

The views expressed in the Belonging, Being & Becoming report are reflected by the American Psychological Association (see http://www.apa.org/pi/families/resources/parents-caregivers.aspx) where parental and caregiver love, appreciation, encouragement and guidance provide the context within which children develop their personalities and identities as they mature.

The ideals promoted by the Belonging, Being & Becoming report and the American Psychological Association contrast with the views expressed in a paper by Logue (2007) in relation to early childhood learning in the USA. She observes that many children entering kindergarten arrive with insufficient social skills to participate meaningfully with the learning activities intended to advance them academically. A related issue for this situation is that these activities are largely content driven from a curriculum that does not address social and
behavioural learning. The result is a high rate of exclusion, with boys being excluded at a rate 4 ½ times greater than that for girls. An Australian study (Dockett & Perry, 2004) examining the factors identified as being most important for a successful transition into primary school reported that parents and educators identified the capacity of children to fit into the student groupings at school as being most important, while children identified their capacity to establish supportive peer relationships and the capacity to operate within the rules applicable in the educational environment.

While the literature examined to this point presents the existing home environment as both having a role to play in children’s capacity to integrate into early schooling and having a substantial influence on their emotional and mental well-being, there appears to be a lack of associated knowledge on the part of early childhood educators. Australian research (Davis et al., 2012) has demonstrated that family day care educators “were more comfortable defining children’s social and emotional wellbeing that they were in identifying causes and early signs of mental health problems” (p. 1193) and there existed a need for tailored mental health promotion strategies to assist in the development of children at the individual level. A similar short-coming has been identified within the childcare industry, where educators were “somewhat limited in their knowledge of risk and protective factors for child and parental mental health” (Sims et al., 2012, p. 138).

The movement to better meet the needs of children is evidenced by an increase in the number of parents electing to send their children to alternative education systems, such as that provided by Steiner Education Australia. The Steiner Education Australia website (http://steinereducation.edu.au/steiner-education) states the purpose of Steiner education as:

Steiner education is designed to be a health-giving education, nurturing and balancing the human faculties of thinking, feeling and will. The prime purpose of Steiner Education is to support and education children such that their own innate and unique human qualities may come to greater fulfilment.

The capacity of educational systems based upon different philosophical approaches provides another factor that needs to be considered when examining the educational needs of young children.

Project background

Learning and learning development in children as they enter formal schooling for the first time is complex and cannot be separated from the home environment. The model shown in Figure 1 (Shonkoff et al., 2012) appears to provide an appropriate theoretical framework within which the influences of the home environment influences the expression of the child’s particular genetic makeup, which in turn sets the context for the health and development of the child upon entry to school. To adequately investigate the appropriateness of this model a number of variables will need to be operationalised to measure:
The social and physical environment;
Physiological state; and
Learning, behavioural and physical/mental well-being.

Data collection will focus on two different classroom styles, a ‘traditional’ early learning environment and a ‘non-traditional’ style offered by Steiner education. A group of 12-20 students from each tradition will be offered the opportunity to participate in the research. The first data will be conducted four weeks after initial entry to formal schooling. Data will be collected in relation to the social and physical environment and transition experience of the student participants by the use of semi-structured interviews with parents and teachers. The oxytocin and cortisol levels for students will be measured through analysis of saliva from mouth swabs and hair and fingernail clippings. The samples will be collected by parents. This group will be tested at the beginning and the end of the first school year. The study will focus particularly on those student participants who demonstrate high levels of cortisol and/or oxytocin.

To assess the possible influence of genetic factors in relation to sensitivity to oxytocin, parents and teachers will be tested for the presence of genetic polymorphism in relation to the oxytocin receptor gene that may sensitise the student participant to stress. This will be done through the use of a non-alcohol mouthwash.

A mixed methods approach to the data analysis will aim to provide insight into a number of research questions, including:

- What association exists between the level of environmental stress as measured through parental and teacher reports and the level of oxytocin and cortisol in students entering formal education for the first time?
- Are students entering formal education for the first time who demonstrate high levels of cortisol and oxytocin at higher risk of experiencing transition problems?
- What influence do holistic education philosophies, such as Steiner Education, have on the stress experienced by students entering formal education for the first time?

Discussion and implications for practice

Stress is a part of everyday life for both adults and children. In recent times the level and use of technology has meant that children are often not being put to bed early enough, they are not playing out doors or performing enough physical activity to make them tired and want to sleep normal hours. When this is combined with a stressful home environment with two busy working parents buying take-away, processed foods that do not support nutrition in a young growing body, the conditions appear to be ripe for the type of adversity driven problems that have been described up to this point. If this context is then added to the stress of entry into early childhood schooling involving meeting new people, changes of routines, boundaries and spending many hours away from the home environment an additional heavy
load of stress is added for some children. This presents a challenging context within which high level learning development is supposed to occur.

Teachers, parents and children need to work as a team to make the best of a new and exciting entry into the educational arena. Each student is an individual and traditional schooling has tended to be set as a mainstream process. This is where non-traditional schooling has tried to fill the gap to focus on the individual learning process. This study will investigate this complex situation using a combination of empirical scientific evidence and qualitative data analysed using techniques from social science and education. Participants will be purposively selected to include children from educational systems based on varying philosophies to ensure a wide range of teacher strategies to integrate children in their first exposure to education are available.

The requirement for appropriate bonding between the early childhood student and their parents and teachers appears as essential to cope with and manage the stresses associated with this early phase of life and education. Most parents expect to bond with their children. Most teachers go into teaching children, especially young children, as they want to make a difference and support the learning process of the young. This project will provide insights into the interrelation between the social and physical environment of the early childhood student, their physiological epigenetic responses to that environment, how these responses are manifested in the nature of his/her bonding to early childhood educators and the quality of learning that occurs during the first twelve months of formal education.

References


Title of Submission:
The Effects of a Mentoring Program on African American Collegiate Football Students at a Predominately White Institution

Submission ID Number 1361

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Abstract:

Paper Abstract

The purpose of this interpretivist qualitative study is to discover and explore what factors influence African American collegiate football student athletes with regard to their experiences that participated in a mentoring program at a predominately white institution. Grounded theory methodology was used for this study. Ten African American collegiate student athletes at a university in the Southeast were interviewed one-on-one to gain insight into their overall experience with the mentoring program. The ten African American collegiate football athletes ranged from ages 20 to 22 years. Specifically, the football student athletes were asked to
examine the programs impact on their overall personal growth, academic progress, and decision making skills. The students participated in the program for one to up to four years for some.

Data were gathered from interviews, field observations, and artifacts that provide rich data in assisting in the overall impact of the mentoring program on the participants. Five themes surfaced through the initial focus coding process that provided insight into the effects of the mentoring program and the participants. The themes that surfaced were: personal growth, decision making, academics, life without college, and the benefits of a mentoring program. Additionally, twenty-three subcategories surfaced out of the effects of the mentoring program with the young men which shared insight on areas such as: being more open, (maturity); helping others, stopping unhealthy behaviors, networking, thinking before acting out, making better decisions, improving grades, providing feedback, encouraging focus in completing homework, giving an alternative to parent/mom or coach, providing another campus resource, allowing someone to trust/confidentiality, and pushing and encouraging to do the right thing.

Furthermore, under the theme of life without college, the student athletes shared seven common subcategories that included: having nothing good (bad and wrong things, bad friends), working 9 to 5, living back home (bad, not good), having a hard life, spending time in jail, not knowing where they would be; and asking “What if?” Overall, the themes assisted in the findings that identified the impact and importance of a mentoring program for African American male student athletes at predominately white institutions.
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CARI: A Model of Assessment for Educator Preparation Programs

Abstract

This paper presents a model of assessment that fosters the development and maintenance of a culture of continuous improvement. Background consisting of a short discussion of accountability, the education standards movement, and a theoretical framework supporting the building of an assessment culture and a model is presented. Seven considerations for developing a model of assessment are presented. A four-phase plan for developing a culture of assessment is discussed. The connection between the considerations for developing a model of assessment, the four-phase plan for developing a culture of assessment and the development of the CARI (collect information, analyze data, report findings, and implement changes) model is woven throughout the document. Finally, a background on the research that supports the development of the CARI model and an example of how the model can be used is provided.

Introduction

Assessment serves multiple purposes for students, faculty, and administrators of institutions of higher education. Further, assessment practices have evolved as a result of the demands of external stakeholders. One dilemma faced by stakeholders is that the term assessment is often used in multiple contexts with different meanings (Garfield, 1994). Harlen (2007) indicates that the term assessment describes a process by which evidence is collected for some purpose. Specifically, Harlen (2007) suggests the term assessment refers to the evidence of what students know and can do as well as judgments about their achievements. However, Anderson, Moore, Anaya, and Bird (2005) express their belief that the emphasis of assessment should be to focus on outcomes in a global
sense. Furthermore, Wang and Hurley (2012) indicate that an assessment movement in higher education began in the 1980s with an emphasis on student learning. An outcome of this movement has been that accrediting agencies have required institutions of higher education to implement program-level and institution-level assessment procedures in addition to documenting student learning.

Consequently, educational policymakers in the United States over the past several decades have implemented many federal and state mandates requiring the use of assessments to meet external accountability demands. Hence, assessments are often used to make high-stakes decisions in the United States. Interestingly though, there exists another, somewhat individualized, level of assessment data use. Indeed, past research indicates that the assessment practices implemented by faculty members are based on their self-held conceptions of assessment. Furthermore, this research also shows the manner in which students approach learning is also affected by these faculty’s assessment practices (Cassidy, 2006; Struyven et al., 2005).

In an era of increased accountability, policymakers often use assessment data to determine student learning and to make high-stakes decisions reflected in educational policy. Consequently, accountability exists for faculty members and for students of higher education. Past accreditation requirements allowed administrators of higher education to determine the expertise of the faculty member and assumed the faculty member was an expert able to make judgments about student work. These expert judgments are no longer enough to meet the ever-changing demands policymakers place on educators today. Through the accreditation process, institutions of higher education now face consequences that include the potential to have their programs closed or
funding removed if they are unable to provide assessment evidence of increased student learning. Furthermore, students must demonstrate their increased learning via course-based and program assessments. There are often high-stakes for students associated with these assessments, including their timely progression through and, ultimately, successful completion of a program resulting in graduation. Due to the high-stakes nature of such assessments, the pressures for accountability are even more evident and place it at the forefront of the assessment movement.

According to the report of the National Commission on Accountability in Higher Education (2005), a clear vision and purpose for assessment is lacking in higher education. As a result of this lack of vision and purpose, limited transparency exists (U.S. Department of Education, 2006). Faculty and students are aware of this lack of transparency, producing a fear or mystification of assessment.

**Accountability and Assessment in Higher Education**

Institutions of higher education in the United States have an obligation to provide instruction, research, serve their communities and regions, observe ethical standards, provide a safe environment for students and employees, and comply with all federal and state health, safety, and employment regulations (National Commission on Accountability in Higher Education, 2005). The National Commission on Accountability in Higher Education (2005) indicates several concerns regarding the state of higher education within the United States. Specifically, the United States is no longer the leader in the world with respect to college completion rates. Also, the United States lags behind other countries in its ability to educate scientists and engineers in order to compete in the global economy. Furthermore, the number of minority students enrolling in college is
rising in the United States; however, many of these same students do not
graduate. Finally, the costs of higher education have consistently grown faster than the
consumer price index. Also, financial support (through grants) is lagging behind
enrollment demand and inflation (National Commission on Accountability in Higher
Education, 2005). It is noted, however, that there is not a problem with either the
amount, or absence, of accountability. Clearly, universities are accountable to many
stakeholders including but not limited to its student body, trustees, private financial
supports, accreditors, and the government. However, it is the case that what matters most
in improving student performance is the devotion of resources and the significance and
clarity of assessment goals, because these factors most directly impact faculty members
and students (National Commission on Accountability in Higher Education, 2005).

The report of the Greater Expectations National Panel (Association of American
Colleges and Universities [AAC&U], 2008) indicates that institutions of higher education
must hold students to high standards when it comes to its outcomes. The report contains
recommendations concerning the knowledge and skills that should be acquired by higher
education students. A partial listing of the skills and knowledge recommended in the
report includes that institutions at a minimum require students to develop strong
analytical, communication, quantitative, and information skills; an understanding of,
experience in, and inquiry into discipline-based knowledge about science, culture, and
society; intercultural knowledge and collaborative problem-solving skills; responsibility
for individual, civic, and social choices; and integrative ways of thinking and applying
knowledge and skills in new settings (National Commission on Accountability in Higher
Education, 2005, p. 25). The commission further indicates that simply providing the
environment is not sufficient. Indeed, assessing student performance on these outcomes is also important to ensuring increased learning.

There is a relatively large degree of autonomy given to institutions of higher education and to faculty who are responsible for establishing curriculum and program requirements. The varying institutional characteristics and the nature of the students who attend colleges and universities are all central components of the higher education system in the U.S. today. Consequently, the complexity associated with such diversity, provides a difficult challenge for stakeholders involved in developing or affecting educational reform agendas. The difficulty lies in the fact that in a complex, decentralized higher education system, there is no comprehensive strategy to provide effective public information including better data about real performance and learning (U.S. Department of Education, 2006). “There is inadequate transparency and accountability for measuring institutional performance, which is more and more necessary to maintaining public trust in higher education” (U.S. Department of Education, 2006, p. 13).

Educational Standards Movement

Educational reform is an ongoing topic among policymakers. Over the years, the emphasis of national and regional accrediting standards has shifted from inputs to processes to outcomes. Indeed, a noticeable shift from inputs to outcomes has occurred over the past two decades as can be seen in the requirements of both national and regional accrediting agencies. Due to this shift, institutions began to demonstrate that their faculty were not only qualified, but that they also used research-based best practices as well as demonstrated that their students attained the course learning outcomes. Thus, national standards and reform efforts focus on evaluation and accountability of institutions of
higher education with a current emphasis on outputs or outcomes of education rather than the inputs. This shift is evident in education reform from the late 1990s into the early 2000s wherein the focus turned to student learning outcomes. Specifically, Goals 2000, a key education initiative of the Clinton administration, encouraged states to develop content and performance standards that were demanding, shifting the focus to outcomes of education.

As mentioned above, historically speaking, institutions of higher education simply had to provide evidence that their faculty members were qualified and that courses were taught using research-based methodologies and strategies informed by best practices. Although faculty qualifications, teaching strategies, and methodology remain a central component of accrediting agencies’ requirements, these have each simply become a point of compliance. Thus, the trend in national and regional standards is to assume that faculty members are qualified, methodologies are research-based, and clinical practices, where appropriate, are completed; therefore, these items have become a simple issue of compliance and no longer the primary barometer of an institution’s worthiness of first-time or continued accreditation. Consequently, the national and regional accrediting standards now emphasize the process by which students are educated and the outcomes they achieve. To sum up the current state of accreditation, it is the case that the emphasis of national and regional accrediting agencies standards is on students’ experiences (processes) and their demonstration of competencies (outcomes) as they transition through programs instead of what is taught by instructors (inputs) (National Council of Accreditation of Teacher Education [NCATE], 2007; Southern Association of Colleges and Schools [SACS], 2012).
Educational policymakers consistently focus discussions and legislative mandates on institutional effectiveness defined as “the systematic, explicit, and documented process of measuring performance against mission in all aspects of an institution” (SACS, 2005). Typically, these policies are meant to be used as a way to encourage institutional accountability. Indeed, one measure often chosen by policymakers to determine the effectiveness of an institution is how well its students perform on various assessments. Thus, as the educational landscape continues to shift from inputs to outcomes, the need for improved performance on assessments becomes more evident. Consequently, high-stakes assessment results seem to have become the key measure of the outcomes in today’s educational climate.

State and federal policymakers implement educational reform hoping to improve students’ academic achievement (Schiller & Muller, 2003). Thus, institutions of higher education have a difficult challenge facing them - in an era of accountability, institutions of higher education have the added responsibility of ensuring their graduates are prepared to become effective professionals who will make a positive impact in their field. With the transition from inputs to outcomes, emphasis on effectiveness and added demands of accountability, faculty members of institutions of higher education today must not only be prepared to teach and lead their students, but also be prepared to be held accountable for the student learning outcomes resulting from their teaching and leadership methods.

**Theoretical Framework**

According to Bandura (1994), in order for a person to perform tasks that ultimately influence the outcomes of specific events that are occurring or will occur, the person’s self-efficacy must support such a belief of personal success. Thus, academic
self-efficacy of an educator can significantly influence beliefs about personal ability to meet the demands of teaching in such a way as to positively impact the learning and achievement of students. Highly efficacious educators have a positive outlook with regard to overcoming obstacles that may seem to be impediments to teaching. Thus, an educator’s academic self-efficacy as it is related to the teaching process and state-mandated assessments can significantly influence teaching and thus, student performance. Further, educators’ beliefs about assessment are impacted and these beliefs then impact their conceptions of assessment. Finally, assessment behaviors are then implemented based upon conceived type of control – actual or perceptual.

Consequently, in order to meet the demands of teaching and assessing effectively, positive self-efficacy needs to be developed. According to Bandura (1994), the best way to produce highly efficacious students is to engage in a variety of designed experiences that foster success through well-developed activities. By providing such experiences, the development of positive self-efficacy will be accomplished; however, experiences that are not well developed may cause failure and thus undermine progress toward positive self-efficacy (Bandura, 1994). As a result, academic self-efficacy increases by successfully engaging in and moving through a variety of well-constructed experiences. These mastery experiences might be carefully constructed activities, courses, or programs that build on each other. Thus, in general, providing extensive opportunities for success impacts one’s ability to master one’s experiences and become more confident in one’s abilities. Specifically, these opportunities foster positive academic self-efficacy that can directly impact teaching effectiveness, with respect to both the delivery of content and assessment, as well as student success.
Indeed, a necessary component in the learning process is ongoing assessment. Holt and Willard-Holt (2000) indicate the importance of dynamic assessment – a way to assess the true potential of learners that differs from conventional tests. The interactive nature of the dynamic assessment process requires that the assessor, or instructor, engage in a meaningful dialogue with the learner, or student in order to (1) find out the learner’s current level of performance or understanding on any given task, and (2) discuss strategies for improving the learner’s performance or understanding of future tasks. When viewed this way, it is clear that assessment and learning are two processes that should be considered as a whole. That is, it is difficult to separate assessment from the learning process. When assessment and learning are viewed as two equally necessary components of a dynamic process, the development and implementation of quality instructional practices will naturally and continually be fostered.

It is prudent to consider a constructivist view of assessment. Specifically, a social constructivist’s view of assessment includes the notion that learning occurs through doing. As such, social constructivism encourages the learner (student) to arrive at a personalized version of the truth – which is influenced by personal background experiences and embedded worldviews. Furthermore, the student is at the center. The student has the responsibility of learning (Glasersfeld, 1989) and the motivation to learn is strongly dependent on confidence and an internal perspective about potential for learning. Vygotsky’s (1978) Zone of Proximal Development further supports that if students are successfully challenged within close proximity to, yet slightly above, their current level of development, they will gain the confidence and motivation needed to
embark on more challenging endeavors. However, it is important to note that in order for students to gain confidence and to become or stay motivated, they must be continually challenged via a stretching of their zones of proximal development (Brownstein, 2001). These challenges should come in the form of tasks that require students to hone skills and acquire knowledge that have not yet been mastered. Furthermore, according to Derry (1999), the ideal situation is that tasks be selected in such a way as to be representative of the learning environment in which students gain personal understanding through mastering skills and knowledge. These types of tasks will engage and challenge students in such a way that make the goal attainable while allowing the students to experience ownership of all aspects of the learning process. Effective assessment strategies such as the use of dynamic assessments as proposed by Holt and Willard-Holt (2000) can continually expand the learner’s zone of proximal development, thus providing more confidence and motivation to continue learning.

Within a social constructivism environment, the approach to learning requires instructors act as facilitators. Students construct meaning via engaging in experiences that provide context within the learning environment. Within this context, the facilitator/instructor provides learning scenarios wherein the student becomes actively engaged in the learning process. These scenarios create an environment and opportunities for students to make sense of the content (Rhodes & Bellamy, 1999) instead of simply memorizing factual content. In order for the instructor to develop a sense of what the learner has gained, it is important that dialogue be at the center of assessment process. Consequently, acting as a facilitator, the instructor engages the students in activities that promote learning new content. Furthermore, within these activities,
assessments are performed that actively engage the learner, that use dialogue, and that use performance-based components. Additionally, these assessments are dependent upon the conceptions of assessment held by the assessor. Thus, at the university level it is then the implementation of assessments that is driven by the faculty members’ conceptions of assessment. Consequently, when building a model of assessment it is both logical and necessary that one must take into consideration, among other issues, these conceptions.

Considerations for Building a Model of Assessment

1. Determine your goal(s) for establishing an assessment system.
   Examples include but are not limited to reasons related to: Accountability; Program improvement; Increase in student learning; Become more efficient as a department; Continuous improvement; etc. Are the goals initiated by internal or external reasons or stakeholders or both?

2. Evaluate to whom and when you are accountable (stakeholders).
   Examples include but are not limited to employers that hire graduates from the institution; program administrators or other faculty members; policymakers; accrediting agencies, etc.

3. Establish the questions that need to be answered based on the goals and stakeholders’ needs.
   For example, if the reason for developing an assessment system is to purely to meet the needs of external stakeholders, then it is imperative to determine what the needs are of those external stakeholders. If the primary goal is to improve the program, then clearly articulate what it is that needs to be reviewed in order to improve the program.
Courses - How well are students performing in each course? Are there trends in failure rates in specific courses? Are there trends in withdrawal rates within specific courses? Are students performing as well in online courses as they do in face-to-face courses?

Program - How well are our students performing/meeting our defined student learning outcomes throughout their program? What are our completion rates? How long is it taking students to complete this degree? How many students do we have? How many are we losing? What is our faculty to student ratio? What percentage of our graduates is immediately obtaining employment in their field? How satisfied are the employers that are hiring our graduates? How satisfied are our students and recent graduates with their program? Is the sequence of courses appropriate to meet the desired student learning outcomes? How satisfied are our faculty in this program? What is the percentage of full-time faculty and adjuncts teaching coursework in this program?

4. Establish various types of assessment data required to meet the goals and needs of stakeholders.

Think about three areas: Inputs, Processes, and Outputs

5. Determine what evidence is needed from each nested level.

Think about individual students, courses, programs, departments, institutions.

Student Level Data – (Entrance characteristics, performance on assignments, program satisfaction, remediation, etc.)
Course Level Data – Some data are reviewed at the individual student level and others are aggregated for each individual course. (Individual and aggregated student performance results on identified course student learning outcomes, course evaluations, course syllabi, etc.)

Program Level Data – Most data are aggregated across each program. (Faculty productivity/qualifications, use of adjuncts, enrollment, curriculum maps, retention & graduation rates, program satisfaction surveys, employer satisfaction, student performance, graduate hire rates, etc.)

Department Level Data – Most data are aggregated for all programs in a department. Same as Program but add budget and efficiency related measures, etc.

College and/or Institutional - Most data are aggregated by department or overall by college. Holistic Analyses.

6. Create &/or determine the measures & Establish minimum expectations.
Rubrics, test scores, surveys, advisory groups, syllabi, course evaluations, etc.

7. Create process for collecting and reporting data

**Historical Context of Teacher Education Unit within the State of Florida**

On September 30, 2011, the U.S. Department of Education released “Our Future, Our Teachers: the Obama Administration’s Plan for Teacher Education Reform and Improvement.” The blueprint outlined the need for institutions of higher education to be held accountable for its graduates of teacher preparation programs. Specifically, educators must focus on outcomes instead as opposed to inputs as in the past. “Outcomes-based data can inform better decision-making at all stages of teacher preparation” (U.S. Department of Education, 2011). The landscape of education
continues to change and the need for institutions of higher education to collect and use data to make instructional decisions is more evident than ever.

Culver (2010) reports that there was a time when Departments of Institutional Research could provide the necessary data for external stakeholders and accreditation agencies; however, times have changed, creating a demand that multiple offices participate in the assessment and data reporting process. Consequently, one of the first decisions made in support of the development of a model of continuous improvement in the unit was to consider the purchase of a data management and reporting tool. And, after several months of reviewing various assessment systems, one was purchased. The following phases detail one institution’s journey to creating a culture of continuous improvement.

Phase 1: Addressing Assessment & Accountability

On the heels of a past accreditation visit where several weaknesses related to assessment were identified, the administration and faculty realized the need to place an emphasis on the creation of a culture of assessment. As a result, an institutional level assessment committee was created with a charge to create innovative ideas related to building an assessment culture on campus, to establish systematic goals related to campus assessment, establish a balance between administrator and faculty relationships regarding assessment, and to provide timely advice and recommendations concerning assessment to the university’s administration. Concurrently, faced with an impending joint state and national accreditation visit, the leadership of the education unit decided to undertake the challenge of creating a model of continuous improvement. Both institutional and education unit leadership believed that assessment data were not only an accountability
mandate from external accreditation agencies, but that they could also be used as
evidence of student performance evident at the institution.

Initially, the leadership within the education unit addressed the mystification of
the terms assessment and accountability by adopting a vision based on the consensus of a
usable definition of each. The definition the faculty, staff, and administrators within the
unit determined best met the needs of this particular institution was, “A periodic report of
performance and a process often in response to a policy demand” (Levin, 1998). The
chosen definition of assessment was the, “Process by which evidence is collected for
some purpose and the judgments made (Harlen, 2007).

Culver (2010) also reported that there was a time when Departments of
Institutional Research could provide the necessary data for external stakeholders and
accreditation agencies; however, times had changed creating a demand that multiple
offices participate in the assessment and data reporting process. Consequently, one of the
first decisions made in support of the development of a culture of assessment in the unit
was to consider the purchase of a data management and reporting tool. After several
months of reviewing various data collection, management, and reporting tools, one was
purchased. The purchase of a data management tool and the elimination of the existing
“home grown” system was finalized during the summer of 2008. Implementation of the
new system was to be accomplished in phases, with the initial phase occurring during the
fall semester of 2008.

*Phase 2: Creating a Culture of Assessment and Implementing an Assessment Tool (data
management and other items)*
The initial thoughts about implementing an assessment system arose due to external accreditation mandates. However, in order to foster a culture of continuous improvement, those in charge of accreditation and assessment related activities knew they had to broaden faculty perspectives concerning the use of data. This included helping faculty move away from the singular view of using data to simply satisfy a mandate to a broader view of using data-driven decisions for course, program, unit, and institutional improvements.

An initial planning committee was established and was charged with meeting two objectives: (1) establish an overall assessment plan; and (2) develop an assessment timeline. Furthermore, the timeline was to focus on two efforts: (1) the implementation of a data management system; and (2) the creation of a culture of continuous improvement.

The level of resistance from internal and external stakeholders served as a barometer of success of the first-semester of implementation. Although there was some resistance, many faculty members, students, and other stakeholders endorsed the implementation of the commercial product. Thus, the first-semester implementation was deemed successful.

Haviland, Turley, and Shin (2011) reported that faculty response to the idea of assessment includes a range of emotions such as being cautious or even negative; however, it is interesting to note these same faculty members assess their students regularly. Unit leadership witnessed these same emotions from its own faculty - some faculty members did question the need for such a product as well as the idea of assessment. It was determined that in order to have continued success, removing
accountability from the picture was a must. If faculty members thought there was a chance that they would be held accountable based on some data, then they were less willing to assist, serve on committees, use rubrics to evaluate student performance, etc. The planning committee took this legitimate fear into consideration when continuing the roll-out process.

At the conclusion of each semester, data reports were shared with faculty and presented at various committee meetings at all levels (program, unit, college, and institution). It became quickly apparent that the initial investment in a commercial product was not only effective but also a necessity. Faculty members and administrators were quick to state that they could not imagine not having this newfound access to data, as was the case prior to adopting an electronic data management system. Indeed, as a result of the adoption of the data management system, systematic planning and systemic changes created the path to establishing the beginnings of a legitimate culture of assessment where data were used to make many decisions and faculty no longer feared accountability.

The functionalities of the data management system employed the first-semester consisted of course-based assessments and initial field experiences. In order to accomplish a successful adoption of these first-semester goals for adoption, both faculty members within the institution and mentor teachers within the school districts had to be trained on the system. The initial planning committee had to develop a plan for training these individuals, including faculty, supervising teachers, principals, placement officers, and others involved in the process. After using the system for one semester, it was determined that course-based assessment data were much easier to obtain and the number
of hours formerly required to manually enter student evaluation data provided by supervising teachers was drastically reduced.

Phase 3: Using an Assessment Tool to Collect and Analyze Data

At the conclusion of each semester, data reports were shared with faculty and presented at various committee meetings at all levels (program, unit, college, and institution). It became quickly apparent that the initial investment in a commercial product was not only effective but also a necessity.

Faculty members and administrators were quick to state that they could not imagine not having this newfound access to data, as was the case prior to adopting an electronic data management system. Indeed, as a result of the adoption of the data management system, systematic planning and systemic changes created the path to establishing the beginnings of a legitimate culture of assessment where data were/are used to make many decisions.

Phase 4: Making Data-Driven Changes as a Result of Data Analysis

Over time, faculty members not only embraced the use of an assessment tool, but also began to participate in the decision-making process to change courses, programs, and Unit policies and practices. Some examples of changes that resulted by employing a data management tool and having a faculty involved in a culture that promotes the use of data include:

· Specific course-based assignments were modified;
· Standardized rubrics for fairness and consistency;
· Sequence of courses offered;
· Addition/Deletion of courses within program;
· Planned reduction of undergraduate enrollment;
· Hired additional faculty;
· Hired additional academic advisors;
· Eliminated one program offered at a branch campus; and
· Established graduate advising office.

**Development of CARI**

Once the involved stakeholders had established a plan to address the items listed for consideration, then an overall model of assessment was established. In this case, faculty, staff, and administrators of the education unit determined to implement a continuous improvement model of assessment described as CARI (collect information, analyze data, report findings, and implement changes). This process is continuous and cyclic; always allowing the user to return to the starting point in order to refine and review proposed solutions to issues encountered. That is, it is a circular process in which stakeholders regularly gather information at any time in order to solve problems, improve curriculum, increase student learning, obtain additional resources, etc. Thus, the details of the way in which the education unit transitioned from a conceptual understanding to an implemented model can be see in the phases described above.
Figure 1: CARI Model of Assessment
Conclusion

According to Feuerstein (2011), multiple considerations must be taken into account when building constructive accountability systems. The development of a culture of assessment is a dynamic endeavor that moves through phases, such as those described above, and allows for the continuous improvement of program content, delivery, assessment, and student learning. The consistent movement through these phases fostered the development of the CARI model as described herein. In this article, we have provided the background research on developing such a model as well as an example of how the model was implemented within an education unit at a southeastern regional comprehensive university. Additionally, a journey of creating a culture of continuous improvement with an emphasis placed on performance-based assessment within a large education unit was provided. Using the CARI model of continuous improvement within a performance-based assessment culture continues to foster change by reducing the emphases of external compliance and by changing the focus to one of internal continuous improvement.
References


Abstract
The author evaluates the application of segmented assimilation theory to Asian American high school students. The author hypothesizes that there will be a non-linear pattern of academic achievement across generations, and the generational pattern might change by school poverty. Using the Education Longitudinal Study of 2002, the author performs two-level HLM analyses and finds that the math results generally approximates the segmented assimilation trend but the reading test scores approximates the classical assimilation pattern.
Retaining Women in Technology: The Indiana Celebration of Women in Computing (InWIC)

Abstract: Women's representation in computing continues to decline, foretelling a future where abundant job vacancies in technology-based jobs occur. The critical shortage of graduating female students in computer and information sciences leads researchers to explore both causes and solutions for the underrepresentation of women. One emerging solution lies in creating special conferences for women in computing, where role-modeling, networking, providing student speaking opportunities and distribution of accurate career information take place. The Indiana Celebration of Women in Computing (InWIC) follows the conference format. This paper contains data from the 2014 assessment of InWIC.

Introduction

The underrepresentation of women in computing launched several initiatives designed to increase awareness, interest and support for recruiting and retaining women in computing. One well-known and large-scale, international initiative is the Grace Hopper Celebration (GHC) of Women in Computing (Anita Borg Institute, 2014). The annual, five-day conference provides attendees with access to technical and non-technical presentations, nightly entertainment activities, mentoring opportunities and a large array of industry recruiters hoping to hire talented female students and professionals. Unfortunately, expensive registration fees and sacrificing multiple classes in order to travel and participate in GHC prohibit many students and faculty members from attending the conference. To address these limitations, the Association for Computing Machinery's (ACM's) Women's Council (ACM-W, 2014) created a less-expensive version of GHC hosted at the regional level, making extensive and costly travel unnecessary.

The Indiana Celebration of Women in Computing (InWIC) launched in 2004. The international GHC and an Australian conference for women in technology preceded InWIC, but the conference inspired a network of several regional celebrations that spans the United States and Canada and now appears in Europe, the United Arab Emirates, New Zealand, Australia, India and Puerto Rico. InWIC 2004 created a conference template for offering a balanced...
program of technical and non-technical sessions, a memorable and entertaining evening activity and a job fair designed to give each student attendee access to several corporate sponsors recruiting female students for internships and full-time jobs. The venue, a state park inn, provides a quiet and relaxing setting for networking, mentoring, learning, presenting and having fun. Based on participant feedback collected after the 2014 InWIC conference, the event succeeds in reinforcing female students’ decisions to pursue computing career paths.

Addressing the Underrepresentation of Women in Computing

The National Center for Educational Statistics (NCES) (NCES, 2014) publishes annual data concerning graduation rates for all majors, broken down by gender, race and ethnicity. Graph 1 indicates a pattern of decreasing numbers of bachelor's degrees awarded to women in areas of study related to computing.

![Graph 1: Percent of Female Undergraduate Majors in Computer and Information Sciences and Support Services](image)

Computer science's premiere professional organization, Association for Computing Machinery (ACM), established a Women's Council (ACM-W) in 1998 (ACM-W, 2014) to address the precipitous decline of degrees awarded to females. ACM-W developed several projects in the ensuing years to combat underrepresentation, including student chapters of the professional organization, designed to support women, and small celebrations (conferences) for women in computing, debuting InWIC in 2004.

Celebration Goals Derived from Research Results

The original InWIC design and all subsequent iterations follow from an examination of promising practices for recruiting and retaining women in computing, in order to combat the issue of underrepresentation in computing. One area of research in the literature of gender issues concerns the difficulty that many young women have in seeing themselves as a successful career people in computing, because so many of their professors, staff members and older peers are male. In addition, the media are saturated with male computer scientist images. Intentional role modeling (Baker and Cohoon, 2006) reduces the influence of all of the male images, by adding female faces and female stories of success, so students visualize their futures as achievable and expected.

Another goal of InWIC that matches promising practices for reversing the declining numbers of women in computing concerns providing accurate career information for female students (Fox, 2001). The literature points out that many male students have access to large, informal networks, where career information is dispensed. Providing women with comparable information can increase parity. A small, intimate conference is an ideal setting for communicating career knowledge and communicating the information in a personal, story-telling manner that provides additional role-modeling opportunities.
InWIC borrowed a third promising practice from research results: community building. When authors query female students who drop out of computing (Seymour and Hewitt, 1997), they often report stories of loneliness brought on by the isolation of being the only female – or one of a very few women – in classrooms or even in the computing major itself. Research indicates that supporting women through student organizations or other programs eases the sense of isolation (Cohoon, 2014).

Whereas a single school may contain a handful of computing majors, gathering the insignificant numbers of women at several small colleges and combining the group with women at regional schools and large, research institutions yields a population that is significant in size. Celebration attendance usually includes between seventy-five and two hundred people. The size is much smaller than GHC's size, but large meetings such as GHC can paradoxically allow more introverted students to feel isolated. Instead, celebrations provide an intimate venue, where women meet many other students who live within driving distance from their college housing units, giving them a new definition of local community, one that can sustain them, if there is no local organization.

Celebration Components and Their Relationship to the Literature

Although InWIC events and sessions vary from year to year, the component categories remain the same. There are multiple tracks to attract a diverse audience. Both undergraduate and graduate students attend InWIC, as do students who perform research and plan to lead academic or research careers and students who will enter industry jobs immediately after attaining bachelor's degrees. Faculty members and industry sponsors also attend InWIC, often speaking during sessions. Accordingly, there are three tracks: one each for undergraduate students, graduate students and faculty members.

The undergraduate track contains sessions that address the goal of providing accurate career information. For example, industry panels with the theme of "A Day in the Life of…” allow sponsors to discuss their daily work lives and give students, who are studying computing in a traditional classroom environment, information that they need to sustain them and inspire them to persist to graduation, as well as to direct them on a curricular path that matches their future course selection to an appealing career detailed by an industry person. Practical events such as resume construction, interviewing skills or networking sessions also fill out the undergraduate track.

The track designed for research or graduate students contains technical presentations by faculty or industry members. The track also includes short talks (called lightning talks, because their duration is about five to ten minutes) by students, allowing the students to present thesis, dissertation or other project topics and gain feedback about their research. Undergraduate students who conduct Research Experiences for Undergraduates (National Science Foundation, 2014) projects also participate in the research lightning talks session. A comparable event for the undergraduate track allows students to give short talks about social, ethical or curricular issues, along with simple presentations about technical information. Both kinds of lightning talks enhance students' confidence, readying them for future conferences by affording experience in a nurturing, friendly environment.

Two kinds of poster sessions follow the lightning talk pattern with undergraduates presenting in an event that is separate from the graduate school event, permitting the undergraduates to attend the graduate school session where role-modeling can occur along with subtle encouragement to attend graduate school. Judges visit each poster (further preparing students for continued research conference attendance), selecting two winners for the poster sessions, who will attend the next GHC and present their posters at a higher level of competition.

Another goal that InWIC adopts from promising research practices is that of building community. InWIC organizers design events to foster student networking such as a game initiated by taped puzzle pieces under each woman's dinner chair. Women gather in groups to assemble the puzzles and then form teams sent on scavenger hunts, where clues involve solving problems collaboratively. Attendees are encouraged to charter or use existing ACM-W chapters at their home institutions to continue the sense of community established at the celebration.

Collaborative Support for Celebration Events

InWIC collaborates with other major organizations that seek to improve the recruitment and retention of women in computing. ACM-W (ACM-W, 2014) provides funding for InWIC and all other celebrations, along with in-kind support, such as use of ACM registration and financial systems and website maintenance and conference promotion. ACM-W works to secure industry support for all celebrations at a global level. For example, Microsoft Research,
Inc. (Microsoft Research, Inc., 2014) sponsored InWIC each of its iterations since 2006. ACM-W also sponsors ACM-W Chapters, as a means to sustain the energy developed by a celebration and to carry celebration momentum to local campuses for use among the months that separate conferences.

Computing Research Association's Committee on the Status of Women in Computing Research (CRA-W) (CRA-W, 2005) is another organization that supports all celebrations, including InWIC. CRA-W's Distinguished Lecture Series provided keynote speakers and panelists for InWIC 2014. InWIC uses intentional role modeling with its premier speakers by requesting that they talk not only about their technical research but that they also speak candidly about their career paths and the difficulties that they have overcome, allowing female students to see that computing careers are attainable.

Coordination with Corporate Sponsors

The alliance between InWIC and industry representatives mutually benefits each partner. InWIC provides a venue in which industry participants can interview students from multiple schools in one, single visit with minimal time and travel expenditure. Because many students are likely to choose a college or university close to their homes and subsequently choose a career close to friends and family, companies often prefer recruiting regionally than recruiting at the national or international level: for example, by attending a large conference with global attendance, such as GHC.

The size of the regional celebrations allows for all companies, regardless of size, to connect with a majority, if not all, of the student attendees. The more-personalized connection provides a unique appeal, and industry sponsors often request comparable events to be held annually rather than every other year.

Having the industry representatives participate in InWIC's program is another way that corporate sponsors and InWIC form a mutually-beneficial partnership. Student attendees benefit from the partnership, because industry program events can focus on practical information that will advance students' careers – information such as interviewing and resume tips and accurate depictions of technical careers. Additionally, the fees paid by industry sponsors support numerous scholarships that allow students to attend the celebrations at little to no cost.

Sponsors at the higher levels are offered opportunities to be on the program, such as serving on the "A Day in the Life of..." panel. In 2014, sponsors at the highest level were given the opportunity to lead the evening activity for participants. Having the sponsors share the activity planning and costs not only helped protect the modest InWIC budget but also allowed attendees to interact with professional women informally.

As indicated in an earlier research discussion about the importance of intentional role models, corporate sponsors provide role-modeling examples for InWIC's students, who intend to enter industry. Technical speakers serve as role-modeling counterparts for students anticipating academic and/or research careers. In turn, industry representatives appreciate opportunities to speak at InWIC, because sessions in the program can showcase and publicize their companies.

InWIC sponsors maintain contact with conference coordinators, after InWIC concludes, and the longstanding relationships between InWIC and industry sponsors help to minimize time and energy losses for program committee members, during organization of a new conference when it is time to recruit sponsors. Ways that organizers locate new sponsors for InWIC include: Holding the conference immediately after a participating school's career fair, contacting a university's Career Planning and Placement center and maintaining contacts with former students, speakers, or visiting interviewers at individual colleges involved in InWIC.

Keeping It Going

InWIC planning committee members teach at universities, any of which is located no more than an hour's drive from others. The close proximity simplifies planning meetings, ensures that coordinators know each other well and promotes accountability among team members. Over the ten years of InWIC's history, organizers overlap committee terms with each other, so that all coordinators serve on multiple conference committees, and one coordinator helped with all six InWICs.

During the ten-year InWIC time span, all committee members became familiar with their own roles and the conference roles of others. This familiarity eased all transitions in conference roles over the years, especially for InWIC 2014, when the role of conference chair changed from one author of this paper to the other. Another benefit...
of sharing conference roles in Indiana is the fact that older committee members encourage younger colleagues to join the team, ensuring that any one committee member takes on a smaller workload.

In addition to having coordinators be familiar with each other's roles, more ways that InWIC organizers improve transitions from one conference to the next is to maintain good records and collect and save all documents related to the conference in a sharable system. Another hint for transitional support is to find a good conference site with an excellent support staff (and good local record keeping) and to hold the conference at this site year after year.

The InWIC conference leadership passed from one author to the other in 2014, aided by having the former chair become the 2014 site chair. The new chair could concentrate on the program, while the former chair handled site details with which she was familiar, but shared the procedures with the new chair, so that she could assume or share the duties during subsequent conferences.

**Participant Feedback**

As most professional meetings, InWIC collects experience feedback from participants. With slightly more than 50% of attendees responding to the forty-question survey, the meeting was clearly a valuable experience to participants. Table 1 summarizes responses from a subset of the survey questions that used a 5-point Likert scale in which respondents selected from the choices strongly agree, agree, undecided, disagree, and strongly agree. The percentage reported was computed by dividing the number of strongly agree and agree responses by the number of total responses.

<table>
<thead>
<tr>
<th>Question</th>
<th>Participant Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I plan to complete/have completed a computing/related degree.</td>
<td>98%</td>
</tr>
<tr>
<td>2. Attending InWIC increased my commitment to complete my current degree program.</td>
<td>93%</td>
</tr>
<tr>
<td>3. Attending InWIC helped me see myself as a &quot;computing person.&quot;</td>
<td>88%</td>
</tr>
<tr>
<td>4. Attending InWIC positively impacted my professional development.</td>
<td>94%</td>
</tr>
<tr>
<td>5. Attending InWIC made me feel part of a community of women in computing.</td>
<td>94%</td>
</tr>
<tr>
<td>6. Attending InWIC fed my interest in a computing career.</td>
<td>91%</td>
</tr>
<tr>
<td>7. Attending InWIC inspired me to emulate the successful women I saw at the conference</td>
<td>98%</td>
</tr>
<tr>
<td>8. Attending InWIC increased my network of technical women.</td>
<td>86%</td>
</tr>
<tr>
<td>9. Attending InWIC motivated me to stay in touch with people I met at the conference.</td>
<td>77%</td>
</tr>
<tr>
<td>10. Attending InWIC gave me tools to be successful in my career as a technologist.</td>
<td>74%</td>
</tr>
<tr>
<td>11. Attending InWIC provided me with valuable opportunities to participate in mentoring (either as a mentee or mentor.)</td>
<td>71%</td>
</tr>
<tr>
<td>12. Attending InWIC taught me about career opportunities at sponsor companies.</td>
<td>100%</td>
</tr>
<tr>
<td>13. Networking opportunities were valuable.</td>
<td>96%</td>
</tr>
<tr>
<td>14. Access to potential mentors was valuable.</td>
<td>94%</td>
</tr>
<tr>
<td>15. The professional development opportunities were valuable.</td>
<td>91%</td>
</tr>
<tr>
<td>16. The range and type of topics covered was valuable.</td>
<td>96%</td>
</tr>
<tr>
<td>17. A Day in the Life panel session was valuable.</td>
<td>100%</td>
</tr>
<tr>
<td>18. The graduate poster sessions were valuable.</td>
<td>77%</td>
</tr>
<tr>
<td>19. The opportunity to meet all corporate sponsors was valuable.</td>
<td>91%</td>
</tr>
</tbody>
</table>
Table 1: InWIC Participant Feedback

<table>
<thead>
<tr>
<th>Feedback</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>The late-night fun activity was valuable.</td>
<td>93%</td>
</tr>
<tr>
<td>The Get Fit and Learn Dance session was valuable.</td>
<td>91%</td>
</tr>
<tr>
<td>The first lightning talk sessions at 9 am were valuable.</td>
<td>97%</td>
</tr>
<tr>
<td>The second lightning talk sessions at 10:15 am were valuable.</td>
<td>94%</td>
</tr>
<tr>
<td>The session on being an underrepresented minority was valuable.</td>
<td>100%</td>
</tr>
<tr>
<td>The undergraduate poster sessions were valuable.</td>
<td>100%</td>
</tr>
<tr>
<td>The graduate school panel session was valuable.</td>
<td>100%</td>
</tr>
<tr>
<td>The career fair was valuable.</td>
<td>93%</td>
</tr>
</tbody>
</table>

Analysis of Data

Section Three, entitled "Celebration Goals Derived from Research Results", relates InWIC goals to a review of the literature and shows how each goal was formulated using research results from the literature of gender issues in computing. The following section (Section Four) demonstrates how the conference leadership addressed each goal through careful construction of an InWIC program and supporting activities, continuing to keep the underlying research in focus.

Now, the authors interpret the survey results, once again based upon the three conference goals and the goals' supporting research. The first goal, "Use intentional role modeling", most closely aligns with the survey item, "Attending InWIC inspired me to emulate the successful women I saw at the conference." The positive response rate associated with the survey item is 98%. A little more than half of attendees responded to the survey, and almost all of them agree that the InWIC role models inspired them.

"Provide accurate career information" is InWIC's second goal. Several of the survey items relate to assessing goal two. The items and their positive response rates follow: "Attending InWIC taught me about career opportunities at sponsor companies," 100%; "A Day in the Life panel session was valuable," 100%; "The graduate school panel session was valuable," 100%. Every single person who responded to the survey responded positively; no one scored the preceding three items neutrally or negatively – a remarkable result. The three items cover a broad range of career information from industrial to academic (both teaching and research.)

The final goal of the conference lies in "building community." Survey item, "Attending InWIC made me feel part of a community of women in computing," directly relates to the goal, so the positive response rate of 94% supports the idea that the goal was attained. Likewise, the following survey items and their positive response rates relate directly to the "building community" goal and attainment of the goal:

| Attending InWIC increased my network of technical women.               | 86%        |
| Attending InWIC motivated me to stay in touch with people I met at the conference. | 77%        |
| Attending InWIC provided me with valuable opportunities to participate in mentoring (either as a mentee or mentor.) | 71%        |
| Networking opportunities were valuable.                               | 96%        |
| Access to potential mentors was valuable.                             | 94%        |

Table 2: Attainment of the "Building Community" Goal

Most projects involving retention of women in technology have a similar version of InWIC survey item, "Attending InWIC increased my commitment to complete my current degree program" linked to an all-encompassing project goal of retention, and InWIC is no different. For example, the 2011 GHC survey contained a comparable survey item, "The conference increased my commitment to a technology career" (Ku and Gilmartin, 2011) that paired with an 82% positive response rate. InWIC's 93% positive response rate for its "Attending InWIC increased my commitment to complete my current degree program" demonstrates the exceptional over-all effectiveness of the small regional conference as a retention treatment.
Conclusion

Although planning and implementing regional celebrations take time, many resources are available for holding such an event successfully. Holding a conference is worth the time that organizers spend, as the efforts contribute positively to retaining women in computing. For additional information about existing celebrations or organizing a new celebration, contact is Jodi Tims, a member of the ACM-W Executive Council and chair of the Celebrations of Women in Computing project. Jodi may be reached via email at jltims@bw.edu.

Holding regional celebration events for women in computing is a powerful way to revitalize women’s pursuit of computing careers. The events provide a win-win for all participants: undergraduate students, graduate students, academic faculty, industry professionals and corporate sponsors.

References


Class Assignments Modeled after Graduate Student Competitions at a National Horticulture Conference

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Abstract

National and international scientific conferences often have graduate student competitions as part of their technical program. These competitions involve oral or poster presentations, frequently with monetary prizes. The prizes provide students with an added incentive to attend the conference and help with travel and conference costs. The American Society for Horticultural Science (ASHS) has two graduate student competitions that I have modeled in my TPSS 654 Communications in the Sciences course. My particular interest in these competitions stem from my being the Chair of ASHS Graduate Student Activities Committee, which is in charge of the judging of these competitions. One competition is the Graduate Student Poster Competition; the other is the Scholars Ignite Student Competition. In the Graduate Student Poster Competition, students stand by their poster and have up to seven minutes to give a brief overall presentation to the judges and answer questions from the judges. In the Scholars Ignite Student Competition, each student presents only one PowerPoint slide and has up to three minutes to talk about the significance and impact of their research. Being in charge of the judging of these two competitions gave me the idea of using them as the basis of class assignments in my TPSS 654 course. One assignment involves the students designing and discussing their scientific posters. In the Scholars Ignite-like assignment, students have one slide and up to three minutes to talk about the significance of their research. These class assignments have provided students with additional experience in designing scientific posters and in focusing on the importance and impact of their work. The added experience in my course helps prepare students for presentations at conferences and for similar competitions that they will encounter at national and international conferences.

Additional index words: scientific communications, scientific posters, graduate students, ASHS, three minute thesis
Introduction

Graduate student competitions have become part of the technical program of national and international scientific conferences. These competitions involve oral or poster presentations, often with monetary prizes. The prizes provide students with an added incentive to attend national conferences and help to defray the expenses of attending the conference. The American Society for Horticultural Science (ASHS) has two such graduate student competitions—the Scholars Ignite Student Competition and the Graduate Student Poster Competition (American Society for Horticultural Science, 2014).

In the Scholars Ignite Student Competition, each student presents only one PowerPoint slide and has up to three minutes to talk about the significance and impact of their research. Scholars Ignite is similar to other research presentation events such as the three minute thesis (Skrbis et al., 2010; The University of British Columbia Graduate and Postdoctoral Studies, 2014) and has become increasing popular at universities (Oregon State University Graduate School. 2014). In the Graduate Student Poster Competition, students stand by their poster and have up to seven minutes to give a brief overall presentation to the judges and answer questions.

My interest in these competitions resulted from my being the Chair of ASHS Graduate Student Activities Committee, which is in charge of the judging of these competitions. Being in charge of the judging gave me the idea of using the format of these competitions as the basis of class assignments in my TPSS 654 Communications in the Sciences course (University of Hawaii at Manoa, 2014a). One assignment involves the students designing scientific posters. For the other assignment, students have one slide and up to three minutes to talk about the significance of their research. The objective of this presentation is to describe how two graduate student competitions at a national horticultural conference were adapted to a graduate course on scientific communications.

ASHS Scholars Ignite Student Competition

ASHS Scholars Ignite Student Competition. At its annual conferences, the American Society for Horticultural Science holds a graduate student competition called the Scholars Ignite Student Competition (American Society for Horticultural Science, 2014). Each student has one PowerPoint slide and up to three minutes to give an oral presentation on the impact of their research. The talk is tailored to a non-specialist (nontechnical) audience. Its purpose is to help the conference attendees become aware of and appreciative of horticulture research. The top three winners receive cash awards.

At the ASHS Conference in Palm Desert, CA in July, 2013, ASHS hosted its first Scholars Ignite competition (Figure 1). I was part of the audience and was so fascinated by this competition that I decided to have a similar presentation format in my TPSS 654 course in Fall, 2013.

My Involvement. At the ASHS Conference in Orlando, FL in July, 2014, the second Scholars Ignite competition was held. As Chair of the ASHS Graduate Student Activities Committee, I
was in charge of the judging of the competition. There were 28 graduate students from various universities in the competition. This gave me the opportunity to see the behind the scenes of the Scholars Ignite competition. I decided to continue having this Scholars Ignite format in my TPSS 654 course in Fall, 2014.

**ASHS Graduate Student Poster Competition**

*ASHS Graduate Student Poster Competition.* At its annual conferences, the American Society for Horticultural Sciences (ASHS) holds a graduate student poster competition (American Society for Horticultural Science, 2014). Students stand by their poster, and a group of judges views their poster and interviews the student about their poster. There are six poster sessions, two per day over a three-day period (*Figure 2*). Each poster session is 45 minutes long. The top three winners receive cash awards.

*My Involvement.* I was in charge of the judging of the students’ posters at the 2012 ASHS Conference in Miami, FL and the 2013 ASHS Conference in Palm Desert, CA. The number of posters entered in the competitions ranged approximately from 65 to 85 posters.

**TPSS 654 Communications in the Sciences**

*TPSS 654.* TPSS 654 is a graduate course on scientific communications (University of Hawaii at Manoa, 2014a). This one-credit required course is offered each fall semester. I cover oral and written types of scientific communication including writing a scientific article, thesis proposal, designing scientific posters, presenting a scientific talk, creating a personal webpage, presenting a talk to a nontechnical audience, presenting orally a thesis proposal, and writing a curriculum vitae. Other topics include audience psychology, elevator pitch, e-mail etiquette, business cards, attending scientific conferences, and writing conference abstracts.

*TPSS 654 Scholars Ignite Assignment.* For the past two years, I have given an assignment called Scholars Ignite, which is patterned after the Scholars Ignite Student Competition held at ASHS conferences. Students create one PowerPoint slide and have up to three minutes to present a talk on the significance and impact of their research (*Figures 3, 4*). I evaluate each student’s presentation.

This assignment has helped the students realize the importance of visuals and images. As they found out, it is more difficult to explain the importance of your work with only one slide as this requires careful consideration of the audience (audience psychology) and the appropriate design with images. Watson and Lom (2008) pointed out that learning to communicate using images is a powerful visual communication skill for students.

*TPSS 654 Scientific Poster Assignment.* For the scientific poster assignment, each student designs their poster using PowerPoint and submits it on a letter size paper (8.5 inches x 11 inches) (*Figure 5*). I do not require the students to print out the poster in actual size since this is
only a class assignment. I do not want them to have to pay the high printing cost of their poster at our college’s poster printing facility or at a local printing shop in Honolulu.

Doing this class assignment gives the students experience in designing and constructing a poster. The experience carries over to the CTAHR Student Research Symposium in the spring semester (University of Hawaii at Manoa, 2014a). This two-day research symposium is a conference sponsored by the College of Tropical Agriculture and Human Resources and the College of Engineering in which undergraduate and graduate students present either a poster or an oral presentation. In addition, the poster assignment gives the students experience in designing posters, which is helpful for future poster presentations and poster competitions at national and international scientific conferences. Rosenberg and Blount (1988) reported that students who presented a poster at a department student research convocation felt less intimated about presenting research at regional or national conventions.

**Conclusions**

In conclusion, these two TPSS 654 class assignments have provided students with additional experience in designing scientific posters and focusing on the significance and impact of their research. The added experience has helped prepare students for oral and poster presentations at conferences and for similar graduate student competitions at national and international conferences.

**Acknowledgements**

I thank the American Society for Horticultural Science (ASHS) and Anita Azarenko, Sandra Wilson, Negar Mahdavian, Tracy Shawn, and Michael Neff for their assistance with the ASHS Graduate Student Poster Competition and the ASHS Scholars Ignite Student Competition.
Literature Cited


Figure 1. Scholars Ignite Student Competition at the 2013 Annual Conference of the American Society for Horticultural Science in Palm Desert, CA.

Figure 2. Graduate Student Poster Competition at the 2014 Annual Conference of the American Society for Horticultural Science in Orlando, FL.
Figure 3. The Scholars Ignite slide of a graduate student in TPSS 654 Communications in the Sciences.

Figure 4. The Scholars Ignite slide of a graduate student in TPSS 654.
Increasing awareness of and education about bed bugs as a public health issue in Hawai’i

Elizabeth Jablonski, Dr. Helen Spafford

Education can aid in prevention/early detection

Bed bugs are a severe public health pest that are re-emerging worldwide. Bed bugs thrive on humans, many unknowingly, to live and oviposit. By educating the public on bed bugs and preventive behaviors, we can reduce their spread.

Management

Eradicating an existing bed bug infestation is difficult and expensive. Currently, governmental and industry efforts in Hawaii are focused largely on treatment of existing infestations with little or no education being provided for prevention of infestations. Yet, as with many other public health issues, prevention is the best and most cost-effective strategy for management.

For people to be effective in preventing bed bug infestations, they must:
1. Be able to correctly identify a bed bug
2. Know how to search for a cryptic insect

Research Objectives

Conduct educational seminars in which participants are taught about bed bugs. The seminars emphasize awareness of bed bugs as a public health issue and how to reduce the spread and incidence of bed bugs. Attending the workshops will increase the participants' self-efficacy on the subject.

Figure 5. The scientific poster of a graduate student in TPSS 654.
ON-LINE TECHNOLOGY HELPING TO EDUCATE STUDENTS

What is the next generation of learning technology; the cellphone or your watch? This research seeks to explore ways people learn with on-line technology. The research question being asked is: How can on-line technology assist students in learning? This study shall investigate using on-line technology for assessment and learning. The methodology used in this research includes both quantitative and qualitative methods: literature review, case studies, interviews and surveying students.

It is understood that environment and culture contributes to the development of cognition. Critical pedagogical and constructivist theories ground this research with the view ‘that one learns from their experiences with their environment’. Colleges are experiencing declining enrollment. The majority of Universities state that on-line education is a significant element of their long-term plan. Each year the number of students taking at least one on-line course increases.

Online classes are here for good and will continue to increase in volume. It is known that every profession (and everyone) has their own learning style(s). On-line learning for architectural students includes visual and real world contexts, followed by verbal information for best results. Interaction between teacher and student, real world problems, and making their own decisions about learning gives architectural students the most satisfaction with on-line learning. With the presents of Desire2Learn (D2L), Adobe Connect, new apps and software tools, on-line learning has become a major force in today’s educational systems, both high school and college. The outcome of this research is a better understanding of how students learn best, with on-line technology.

Keywords: Mobile Technology, Mobile Learning, M-Learning.

Literature Review

M-Learning has many different definitions from various communities. One definition of M-Learning is “Any sort of learning that happens when the learner is not at a fixed, predetermined location, or learning that happens when the learner takes advantage of the learning opportunities offered by mobile technologies” (Wikipedia, 2013b). M-learning has been defined as situated, just-in-time learning, negotiated across digital technology in answer to the requirements of the user (Traxler, 2009; Laurillard, 2007; Peng, Su, Chou, & Tasi, 2009).

What makes m-learning different from other forms of technology-supported learning is the way it can mediate and facilitate learning experiences (Peters, 2007, p. 10). This may suggest that M-Learning does not offer affordances that are specific to itself, yet, by contrast, it can be suggested that its very ubiquity and mobility make it a discrete learning form (Peng et al., 2009, p. 172). “In other words, the learning experiences that are affected when an individual negotiates meaning for themselves, on their own or collaboratively using their own device in a situated context, is what sets m-learning apart from e-learning” (Melhuish & Falloon, 2010, p. 4).
Mobile devices offer five advantages for education: portability, access, learning opportunities, connection, and personal experiences. Laurillard (2007) and Sharples (2007) argued that mobile devices offer portability such that they are changing the nature of work activities and learning. Access to education has become ubiquitous and affordable. Learning opportunities have become situated and just-in-time. M-Learning and laptops (computers, smartphones, iPads, etc.) enable connectivity and interactivity by way of other devices, people, technologies, and networks. Peters (2007, p. 3) argued that mobile devices offer individualized and personal experiences; a “unique scaffolding that can be customized to the individual’s path of investigation”. Mobile devices give the students “anytime, anywhere learning”.

**History of M-learning**

Some argued that the history of M-Learning began in 1901 when the Linguaphone by way of wax cylinders gave language lessons; technology continued to improve until we reached the 1960s and 1970s, developing eight track tapes, compact cassette tapes, and compact discs (CDs). In 1968, the Learning Group at Xerox Palo Alto Research Center with Alan Kay developed the “Dynabook”, a book size computer that ran simulations for learning. The Dynabook was portable, carried an encyclopedia of knowledge, and could be plugged into available networks. In the 1990s, universities in Asia and Europe were developing and evaluating M-Learning for their students. In May 1991, the Orange Grove Middle School of Tucson Arizona with Apple’s Classroom of Tomorrow developed the “Wireless Coyote” project using mobile computers connected to wireless networks. Also in the 1990s, the Palm corporation gave grants to companies and universities to develop the use of M-Learning on the PalmOS (Wikipedia, 2013b).

In the early 2000s, the following trade shows and conferences were organized to specifically investigate the use of handheld devices and M-Learning: the Society for Applied Learning Technology (SALT), International Association for Development of the Information Society (IADIS) M-Learning international conference series, Wireless, Mobile and Ubiquitous Technologies in Education (WMUTE), Handheld Learning in London, International Conference on Machine Learning (ICML), mLearn, and Mobile Learning in Malaysia (Wikipedia, 2013b). M-learning companies were formed specializing in content development, authoring and publishing, and delivery and tracking. From 2010 on, hardware and software were and are being developed to enhance M-Learning; hardware includes smartphones, tablets, laptops, eye glasses, clothes, and watches. Software delivering M-Learning courses to mobile operating systems includes GoMOLearning, Captivate, Lectora, Articulate, Storyline, Panopto, Fuzemeeting, Skype, Video Conferencing, and Adobe Connect (Wikipedia, 2013b).

A number of studies have been performed looking at the key benefits that mobile technology offered to educators (Rau, Gao, & Wu, 2008; Markett, Sanchez, Weber, & Tangney, 2006; Peters, 2007; Kukulksa-Hukme & Traxler, 2005).

Mobile devices are believed to offer some unique benefits to learning. These benefits, often the foci of many M-learning research, includes flexibility, accommodating special needs of some learners, improving learners’ engagement and motivation, encouraging learners’ critical thinking and construction of knowledge, and facilitating the communication and collaboration between learners. Zurita and Nussbaum (2004) observed that M-learning results in more interaction and collaboration than traditional learning. Based on the observation notes and audio transcripts, Hennessy (2000) found that students in M-learning were engaged in active and reflective learning. (as cited in Xie & Pursel, 2010, p. 5)
Kim, Mims, and Holmes (2006) argued that educational benefits fall into four groups: providing students and educators with time and freedom of location, increasing speed in learning and teaching, allowing one-to-one learning, and enabling teachers with new educational subjects and learning.

Donovan, Bransford, and Pellegrino (2004) argued that the key characteristics of learning include but not limited to the following: memory and the structure of knowledge; problem-solving and reasoning; the early foundation of learning; regulatory processes that govern learning, including metacognition; and how symbolic thinking emerges from the culture and community of the learner. Sergio (2012) argued that the following themes will drive development of M-learning initiatives in innovative directions: continuous learning; educational leapfrogging; a new crop of older, lifelong learners (and educators); breaking gender boundaries, reducing physical burdens, a new literacy emerges; software literacy; teachers and pupils trade roles; synergies with mobile banking and mobile health initiatives; new opportunities for traditional educational institutions; and a revolution leading to customized education. Learning occurring in meaningful and authentic contexts helps to give mobile technology the ability for groundbreaking educational practice. Because of the mobility and strong computing power of technologies, learning becomes ubiquitous and seamless (Liu, Tan, & Chu, 2009, p.162).

**Attributes Relevant to M-learning**

M-Learning opportunities are created when educational technologies and resources are coupled with mobile devices. Despite socio-political isolation, cultural or geographical distance, M-Learning allows contact and communication with other professionals. Lessons from the past have taught us that effective pedagogy leads to effective learning (Beckmann, 2010). Beckmann (2010) argued that other attributes relevant to M-learning include: students that are mobile; learning is intertwined with other actions as part of life; learning can produce and gratify goals; the management and control of learning can be dispersed; context is built by students through interaction; formal education can both conflict and complement M-Learning; and M-Learning increases ethical issues of ownership and privacy. Also, M-Learning will not be effective unless you have high-quality Internet service.

Mobile learners construct their own conceptual understanding of the social and physical world and interact accordingly. Long, Marchetti, and Fasse (2011) argued that students taking online courses with high levels of interaction make better grades and report more learning than students in similar face-to-face classes.

The conceptualization of framework around the topics under study takes place not only at the level of the individual, but also through collaborative group work and discussion-based sharing with peers and lecturers. For development workers, comparing one’s own conceptions and experiences with those of others is central to a cognitive engagement with relationship between theory and practice. (Beckmann, 2010, p. 168).

**Student Satisfaction**

Coleman (2005) argued that students flock to online courses for reasons of flexibility, quality, and accessibility. Coleman gave the following reasons why students like and take online courses: anytime, anywhere learning; student-centered teaching; courses are accessible 24 hours a day, seven days a week;
increase student interaction; exposure to knowledge and real world situations; teach skills in using technologies; less intimidating than a classroom; increased bonding and camaraderie; instructors are more approachable; allow for a broad range of content; everyone gets a chance to contribute; online degrees are as respected as traditional degrees; facilitate team learning; and diversity of course material.

Leong, Ho, and Ganne (2000) argued that basically, student satisfaction with online courses are influenced by instructor interaction, workload/difficulty, and system-wide technology. Leong et al. (2010) further argued that demographic factors, such as year in school or gender had no significant effect on student satisfaction with online courses. Prior experience with email, Internet, online courses, and computers was not significant in student satisfaction with M-learning.

Regression analysis was performed to determine the contribution of predictor variables to student satisfaction. The effects of student background variables on predictors were explored. The results showed that learner-instructor interaction, learner-content interaction, and Internet self-efficacy were good predictors of student satisfaction while interactions among students and self-regulated learning did not contribute to student satisfaction. Learner-content interaction explained the largest unique variance in student satisfaction. Additionally, gender, class level, and time spent online per week seemed to have little influence on learner-learner interaction, Internet self-efficacy, and self-regulation. (Kuo, Walker, Belland, & Schroder, 2013, p. 16)

Learning Styles

M-Learning has been compared to constructivist learning involving creativity and spontaneity (A. Herrington & J. Herrington, 2007). Corrent-Agostinho and Hedberg (2000) argued four general principles of an constructivist learning situation: 1. Learning is a development of construction; 2. Learning happens through social consultations of meaning; 3. Learners are occupied with authentic contexts; and 4. Philosophical thinking is an final goal.

Constructivism is a belief of learning based on the idea that knowledge is created by the individual through his/her contacts with their environment (Rovai, 2004). Constructivists believe in individual understanding of reality (Sjoberg, 2007). Sjoberg (2007) argued that constructivism is a learning methodology that gives learners the opportunity to gain experiences by which they can solicit their own questions and build their own models. Sjoberg (2007) also argued that constructivism enables a community of learners to participate in reflection, activities, and discourse. Inspires learners to ownership of ideas and purse independence, shared social relationships, and enablement as the goal. Learning becomes a self-regulatory activity: Students figure out things for themselves instead of responding to stimuli.

Constructivists argued that everyone has their own special learning style. Sometimes, the learning styles have as much to do with how the brain works as environment. Autopsies have been performed on both dyslexic and normal brains. The dyslexic brain showed even development on both spheres of the mind, while the normal mind showed asymmetrical growth in only one sphere.

Equal development of both spheres permits learning-differently students to enjoy special gifts. They “see” things 3-dimensionally, giving them a unique kind of spatial awareness. This allows some of them to be, among other things, excellent architects, inventors, directors of film and theatre, interior decorators, and teachers for other learning-differently students (students who learn differently)(Alsenoy, 2011, p. 1).

Ferriman (2013) argued that there are seven categories of learning styles:
1. Visual—Individuals use images, pictures, color, and diagrams to learn;
2. Physical—Individuals learn by doing;
3. Aural—Individuals use sound to learn, such as recordings, rhythms, and music;
4. Verbal—Individuals use words to learn, reading aloud, making speeches, and writing;
5. Logical—Individuals use logic and reasoning to comprehend a concept;
6. Social—Individuals learn best in groups and enjoy working with others;
7. Solitary—Individuals enjoy working and learning alone.

It is safe to say that most individuals have more than one learning style; using a combination of styles to learn. For example, architects use visual, physical, logical, and solitary styles to learn.

**Methodology**

The research methodology is a combination of quantitative and qualitative methods. This paper analyzes data from two surveys administered to students in the Department of Architecture at SIUC. The first survey was administered to an undergraduate architectural design studio in March 2013. This survey uses background characteristic variables, criterion variables, Likert scale questions, and open-ended questions to address the research: What mobile devices do students use the most, benefits of M-Learning to students, barriers of M-Learning to students, and methods by which students learn best. The second survey was given to architectural graduate students in September 2013, their first semester of being enrolled in SIUC’s online M-Arch program. The second survey also uses background characteristic variables, criterion variables, Likert scale questions, and open-ended questions to address: What mobile devices do students use the most, learner-instructor interaction, learner-learner interaction, authentic learning, active learning, personal relevance, student autonomy, and student satisfaction with M-Learning. This research is generalizable to undergraduate and graduate architectural programs. The surveys were administered to the students in classroom settings; the small population made statistical significance impossible to achieve.

The surveys were pretested with students from each year. Survey instruments were reviewed by the Human Subjects Committee, with recommendations of wording for some of the questions. The surveys were corrected, approved, and administered to the students.

The undergraduates completed the survey in their design studio in one sitting. Students in the online graduate program were emailed the survey. In three separate emailing, 17 of 25 graduate students completed the survey for a completion rate of 68%.

**ANALYSIS OF DATA**

The summary of the undergraduate survey is as follows: the average student was a 21 year old white male who works part-time and goes to school full-time. The majority of the students had not taken an online course and do not plan to take one in the future; not a surprise, the student advisor discourages students from taking online courses. One hundred percent of the students owned laptop computers and smartphones. The mobile device most used by students for class work are their laptops, followed by smartphones. Most students thought M-Learning could be of use in saving time and giving them the ability to learn anywhere. Barriers to M-Learning include: misplacing the mobile device, internet down, cheating, verbal miscommunication, and lack of motivation on the student’s part. Architectural students learn best with visual instruction and second with learning in real world context. Most students thought mobile-technology will help them to learn better.
In March 2014, the junior architectural studio was interviewed. The students were asked ‘how did they use their laptop computer’ and ‘how do they learn with mobile technology’? Collectively, today’s students use their laptops in about twenty-four (24) different ways or functions. Students use their laptop for the following but not limited to functions: download software for school, work, and entertainment; component selection library; social media; online shopping; cheaper course materials/textbooks; gaming; file sharing; instant communication; networking; data retrieval/storage; information processing; research; online classes; socializing; problem solving; tutorials; meet people; TV/music/movies/itunes/youtube/videos/entertainment; programing; hacking; internet access/emails/cooking recipes; homework; organization; and note taking. One student’s response to how he learns with mobile technology is as follows:

“I see learning with mobile technology as learning across multiple contexts using personal electronic devices. We use these devices for social media and content interaction. I find it very convenient because it is accessible from virtually anywhere. I use it through the school to look at lecture notes and for homework assignments. I also am in an independent study class and we meet once a week and have a meeting using webcams and have class all on line. With this learning I can be at any location with an internet connection. The only way it could limit my learning is if I do not use the resources and ask questions. The only problem I see with everything going online is that I see the teachers becoming less important and not used as much as they should be. The teachers are there for the students to share their knowledge and to help better ourselves. That is why I believe there always need to be some sort of weekly meeting with the students and professors. The other thing about everything being online is that the libraries are not being used as much as they used to. If I need to research a topic I can easily find information online and not have to take time to go to the library and search for the materials.”

As a professor of architecture teaching design, the laptop and internet are indispensable. The digital era has greatly affected the field of architecture; working drawings (blue prints) are produced, plotted, and emailed by computer (usually a laptop). The University has started a new program where each entering freshmen are given (paid by student fees) a computer tablet for classwork. Students are required to have a laptop by their sophomore year.

The undergraduate survey was collected, coded, and put into the SPSSX statistical computer program. The demographics of the undergraduate design studio were homogeneous in that the majority of the students were white, juniors, working part-time, and going to school full-time. A frequency distribution of the survey was generated using the research questions as variables.
### Undergraduate Survey One

The questions and responses of the undergraduate survey are shown in Tables 1-13.

#### Table 1

**Background Characteristics**

<table>
<thead>
<tr>
<th>Gender</th>
<th>Male</th>
<th>72%</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Female</td>
<td>28%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Employment status</th>
<th>Full-time</th>
<th>0%</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Part-time</td>
<td>43%</td>
</tr>
<tr>
<td></td>
<td>Unemployed</td>
<td>57%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Race</th>
<th>White</th>
<th>57%</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Non-white</td>
<td>43%</td>
</tr>
</tbody>
</table>

*Notes: Class population = 14, average age = 21, and the highest grade = 3rd year design studio.*

#### Table 2

**Have You Ever Taken an On-line (Video) Course?**

<table>
<thead>
<tr>
<th></th>
<th>Yes</th>
<th>No</th>
<th>Do not know</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>43%</td>
<td>57%</td>
<td>0</td>
</tr>
</tbody>
</table>

#### Table 3

**Do You Believe That You Will Take an On-line Course in the Future?**

<table>
<thead>
<tr>
<th></th>
<th>Yes</th>
<th>No</th>
<th>Do not know</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>43%</td>
<td>50%</td>
<td>7%</td>
</tr>
</tbody>
</table>

#### Table 4

**Circle All the Mobile Devices That You Own**

<table>
<thead>
<tr>
<th></th>
<th>Laptop</th>
<th>IPad</th>
<th>Smartphone</th>
<th>Tablet</th>
<th>Other (Specify)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>100%</td>
<td>29%</td>
<td>100%</td>
<td>21%</td>
<td>0</td>
</tr>
</tbody>
</table>

#### Table 5

**Circle the Mobile Devices That You Use the Most**

<table>
<thead>
<tr>
<th></th>
<th>Laptop</th>
<th>IPad</th>
<th>Smartphone</th>
<th>Tablet</th>
<th>Other (Specify)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>100%</td>
<td>7%</td>
<td>71%</td>
<td>7%</td>
<td>0</td>
</tr>
</tbody>
</table>

#### Table 6

**How Can M-learning Be of Use to You?**

<table>
<thead>
<tr>
<th>Students' answer</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>It would be easier for me because I have a family and a job and I would be able to do school work when I have a chance throughout the day on my schedule.</td>
<td>US-1</td>
</tr>
<tr>
<td>M-learning can be of some use to me for the convenience in accessing the class material and lessons.</td>
<td>US-2</td>
</tr>
<tr>
<td>I could learn almost anywhere I wanted to without being restricted to a classroom.</td>
<td>US-3</td>
</tr>
<tr>
<td>Using my mobile phone.</td>
<td>US-4</td>
</tr>
<tr>
<td>I would be able to take more classes without having to make the long drive to class.</td>
<td>US-5</td>
</tr>
</tbody>
</table>
ON-LINE TECHNOLOGY HELPING TO EDUCATE STUDENTS

Table 7

List Benefits of M-learning to Students

<table>
<thead>
<tr>
<th>Benefits</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>You can access your class information wherever you are, no time constraints for/when accessing course information.</td>
<td>US-11</td>
</tr>
<tr>
<td>Both flexibility in scheduling and being able to work I think are things that could help a number of students. The other benefits to M-learning could be the reduction in book expenses as I am sure that e-books would be used.</td>
<td>US-6</td>
</tr>
<tr>
<td>Students can work at their own pace. There are also more nontraditional students so they would be able to work and also attend school without compromising one or the other.</td>
<td>US-7</td>
</tr>
<tr>
<td>It makes school work easier when you are able to work on it wherever you are. It also provides educational support and allows students to interact more.</td>
<td>US-12</td>
</tr>
</tbody>
</table>

Table 8

List Possible Barriers of M-learning to Students

<table>
<thead>
<tr>
<th>Barriers</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lack of motivation to take classes; no Internet access; unexpected computer issues; login problems; no time to take classes; and forget to take classes.</td>
<td>US-8</td>
</tr>
<tr>
<td>Cheating on the homework and tests and technical problems.</td>
<td>US-10</td>
</tr>
<tr>
<td>Students can work at their own pace. There are also more nontraditional students so they would be able to work and also attend school without compromising one or the other.</td>
<td>US-14</td>
</tr>
<tr>
<td>I think that the barriers M-learning would face are things like unorganized teachers, lack of motivation from students, and online systems that are at times down for hours or days. In my experience with online classes, I found it hard to sit down and do the work due to there being no pressure or dedicated time to do, making the class more difficult than it needed to be.</td>
<td>US-9</td>
</tr>
</tbody>
</table>

Table 9

Circle the Method(s) by Which You Learn Best

<table>
<thead>
<tr>
<th>Verbal information</th>
<th>Visual information</th>
<th>Learning in real world contexts</th>
<th>Lectures</th>
<th>Discussions</th>
</tr>
</thead>
<tbody>
<tr>
<td>14%</td>
<td>71%</td>
<td>64%</td>
<td>7%</td>
<td>36%</td>
</tr>
</tbody>
</table>

Table 10

How Can Mobile Technology Help You To Learn Better?

<table>
<thead>
<tr>
<th>Students' answer</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Able to access class resources anytime and going at your own speed to comprehend the material.</td>
<td>US-13</td>
</tr>
<tr>
<td>I would be able to replay lectures or slow them down when need to.</td>
<td>US-3</td>
</tr>
<tr>
<td>It allows a student to study or do research on the go. The speed of mobile technology today is also much faster, which would allow one to learn more in less time.</td>
<td>US-7</td>
</tr>
</tbody>
</table>

Table 11

How Would You Improve the Hardware of Mobile Technology?

<table>
<thead>
<tr>
<th>Students' answer</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ideally if mobile batteries never die and perhaps told you where it was when you lost it.</td>
<td>US-1</td>
</tr>
<tr>
<td>Make tablets and smartphones compatible with a mouse.</td>
<td>US-7</td>
</tr>
</tbody>
</table>
Table 12

*How Would You Improve the Software of Mobile Technology?*

<table>
<thead>
<tr>
<th>Students’ answer</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adding an app that allows you to print wherever a printer is available.</td>
<td>US-3</td>
</tr>
<tr>
<td>Mac and Windows or iPhones and Androids need to come to some resolution regarding all apps being available for both systems.</td>
<td>US-2</td>
</tr>
</tbody>
</table>

Table 13

*What Are Your Views on M-learning?*

<table>
<thead>
<tr>
<th>Students’ answer</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>I think for me it does not work. The benefits would be amazing, the extra time to work and the freedom of it all, but I need to be able to talk to professors and ask questions to help me learn. When left to my own, I find it hard to dedicate myself to courses that I do not attend ever.</td>
<td>US-5</td>
</tr>
<tr>
<td>I believe that it would be an easier and more convenient way of learning.</td>
<td>US-8</td>
</tr>
<tr>
<td>I feel like M-learning is the future but scared about lack of communication between students to students and students to teachers.</td>
<td>US-12</td>
</tr>
</tbody>
</table>

To summarize the above undergraduate survey of M-Learning, the students were an average age of 21, the majority are white males that work part-time and go to school full-time. Most of the students in class had not taken an online course and did not plan to take one in the future; not a surprise, the student advisor discourages students from taking online courses. One hundred percent of the students owned laptop computers and smartphones. The mobile devices most used by students for class work were their laptops, followed by smartphones. Most students thought M-Learning could be of use in saving time and giving them the ability to learn anywhere. Barriers to M-Learning include misplacing the mobile device, Internet down, cheating, verbal miscommunication, and lack of motivation on the students’ part. Architectural students learn best with visual instruction and second with learning in ‘real world’ context. Most students thought mobile technology will help them learn better.

**Graduate Online Survey**

The second survey was administered to students enrolled in the SIUC online M-Arch program. The graduate survey was modeled after the Distance Education Learning Environment Survey (DELES). DELES is a psychosocial survey designed to measure university and college online learning environments. Normally, DELES uses six scales to measure students’ views of their online environment: Instructor Support, Student Autonomy, Active Learning, Student Interaction and Collaboration, Personal Relevance, and Authentic Learning. By statistically measuring associations between the six DELES scales and the scale of “Enjoyment”, researchers have been able to determine that Personal Relevance is the strongest positive and statistically significant contributor to student satisfaction in distance education in one setting. The Turkish DELES (TR-DELES) researchers discovered that, with their population, students satisfaction was more closely aligned statistically with Instructor Support. Conversely, the Spanish determined, with the Spanish DELES (Sp-DELES), that Active Learning and Autonomy are most influential on distance education student satisfaction (Wikipedia, 2013a).

It appears that environment and culture play a role in students’ distance education satisfaction.

DELES has three psychosocial aspects: personal development, relationship, system change and
maintenance, which form its theoretical structure. The personal development aspect assesses one’s progress and accomplishments with the distance learning (D-Learning) environment; the relationship dimension denotes persons who support and interact with others in the D-Learning environment; and system change and maintenance evaluates the D-Learning environment (Wikipedia, 2013a).

The survey instrument that was created for this research is a modified DELES. The graduate survey has seven scales: (a) Learner-Instructor Interaction; (b) Learner-Learner Interaction; (c) Authentic Learning (real life problems); (d) Active Learning (own strategies); (e) Personal Relevance (out-of-class); (f) Student Autonomy (own decisions about learning); and (g) Student Satisfaction With M-Learning.

According to Table 14, the majority of students in the online M-Arch program are white males between the ages of 25-35, enrolled in college full-time, and have taken an online course in the past.

Table 14
The Graduate Survey Demographics

<table>
<thead>
<tr>
<th>Gender</th>
<th>Male</th>
<th>70.5%</th>
<th>Female</th>
<th>29.5%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18-24</td>
<td>0%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>25-35</td>
<td>60%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>36-46</td>
<td>25%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>47-57</td>
<td>13%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Above 58</td>
<td>2%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>College status</td>
<td>Undergraduate</td>
<td>12%</td>
<td>Graduate</td>
<td>88%</td>
</tr>
<tr>
<td>Race</td>
<td>White</td>
<td>88%</td>
<td>Non-white</td>
<td>12%</td>
</tr>
<tr>
<td>Enrolled in college</td>
<td>Full-time</td>
<td>88%</td>
<td>Part-time</td>
<td>12%</td>
</tr>
<tr>
<td>Have you ever taken an academic course on-line?</td>
<td>Yes</td>
<td>76%</td>
<td>No</td>
<td>24%</td>
</tr>
</tbody>
</table>

After the demographics, the graduate survey asks the students to identify their most used mobile devices for schoolwork (see Table 15). When doing schoolwork, 65% of the students “Always” use their laptop computer and 24% use the laptop “Often”. The next devices used by students are smartphones and tablets, with iPads being used the least.

Table 15
Graduate Survey (Scales 1-6)

<table>
<thead>
<tr>
<th>Identify your mobile devices most used for schoolwork</th>
<th>Never</th>
<th>Seldom</th>
<th>Sometimes</th>
<th>Often</th>
<th>Always</th>
</tr>
</thead>
<tbody>
<tr>
<td>Laptop</td>
<td>-</td>
<td>-</td>
<td>5%</td>
<td>24%</td>
<td>65%</td>
</tr>
<tr>
<td>iPad</td>
<td>59%</td>
<td>-</td>
<td>5%</td>
<td>-</td>
<td>5%</td>
</tr>
<tr>
<td>Smartphone</td>
<td>29%</td>
<td>18%</td>
<td>24%</td>
<td>12%</td>
<td>5%</td>
</tr>
<tr>
<td>Tablet</td>
<td>35%</td>
<td>5%</td>
<td>18%</td>
<td>12%</td>
<td>-</td>
</tr>
<tr>
<td>Other (specify)</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Identify the method(s) by Visual information</td>
<td>-</td>
<td>-</td>
<td>12%</td>
<td>47%</td>
<td>29%</td>
</tr>
</tbody>
</table>
ON-LINE TECHNOLOGY HELPING TO EDUCATE STUDENTS

<table>
<thead>
<tr>
<th>Scale-1: Learner-Instructor Interaction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lectures - 5% 5% 29% 47%</td>
</tr>
<tr>
<td>Discussions - 12% 35% 18% 12%</td>
</tr>
<tr>
<td>Other (specify) - 5% 35% 18% 29%</td>
</tr>
<tr>
<td>If you had a question, the professor found time to respond. - 5% 18% 82%</td>
</tr>
<tr>
<td>The professor responded to your questions promptly. - 5% 24% 76%</td>
</tr>
<tr>
<td>The professor gave you input on work assignments. 5% - 41% 54%</td>
</tr>
<tr>
<td>The professor encouraged class participation. 5% - 5% 24% 59%</td>
</tr>
<tr>
<td>It was easy to contact the professor concerning matters of class. - 5% 5% 88%</td>
</tr>
<tr>
<td>I received positive and negative input on my work from the professor. - 5% 12% 41% 41%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Scale-2: Learner-Learner Interaction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Students in the class and I shared ideas. - 24% 29% 47% 12%</td>
</tr>
<tr>
<td>My classmates and I collaborated on assignments. 35% 12% 29% 12% 5%</td>
</tr>
<tr>
<td>Some of the activities in class involved group work. 41% 29% 18% 5% -</td>
</tr>
<tr>
<td>What was learned in class was related to real life situations. - 5% 41% 29% 18%</td>
</tr>
<tr>
<td>Mobile learning often related to activities I have outside of class. 5% 18% 29% 29% 12%</td>
</tr>
<tr>
<td>In class, I used my everyday experiences. - 5% 29% 29% 35%</td>
</tr>
<tr>
<td>In class, I studied real life cases. - - 18% 35% 47%</td>
</tr>
<tr>
<td>Class assignments involved using real world information. - - 18% 29% 47%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Scale-3: Authentic Learning (real life problems)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mobile learning allowed me to link class work to my life outside of school. 12% 5% 41% 18% 24%</td>
</tr>
<tr>
<td>Mobile learning was convenient (anytime; anywhere learning). - - 29% 18% 53%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Scale-4: Active Learning (own strategies)</th>
</tr>
</thead>
<tbody>
<tr>
<td>I have developed my own strategy for how I learn best. - 5% 12% 53% 24%</td>
</tr>
<tr>
<td>M-learning allowed me to investigate topics of interest. - - 29% 65% 5%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Scale-5: Personal Relevance (out-of-class)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mobile learning allowed me to learn in my own way. 5% - 24% 35% 41%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Scale-6: Student Autonomy (own decisions about learning)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mobile learning allowed me to learn in my own way. 5% - 24% 35% 41%</td>
</tr>
</tbody>
</table>

Table 16
Graduate Survey (Scale-7)

<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly disagree</th>
<th>Disagree</th>
<th>Neither disagree nor agree</th>
<th>Agree</th>
<th>Strongly agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>I was satisfied with the online class.</td>
<td>-</td>
<td>5%</td>
<td>12%</td>
<td>53%</td>
<td>29%</td>
</tr>
<tr>
<td>I prefer m-learning to being in the classroom.</td>
<td>-</td>
<td>5%</td>
<td>47%</td>
<td>29%</td>
<td>18%</td>
</tr>
<tr>
<td>The online class enhanced my professional development.</td>
<td>-</td>
<td>-</td>
<td>12%</td>
<td>47%</td>
<td>29%</td>
</tr>
<tr>
<td>I plan to take another course online in the future.</td>
<td>-</td>
<td>-</td>
<td>24%</td>
<td>41%</td>
<td>41%</td>
</tr>
<tr>
<td>Questions concerning class were answered</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>24%</td>
<td>74%</td>
</tr>
</tbody>
</table>

Student with M-learning
The second question of the survey asks the students to identify the method(s) by which they learn best. The students said that they “Always” learn best with “visual information”, followed by “real world contexts”. Architectural students’ third best method of learning is with “verbal information”.

The students answered the questions of the Learner-Instructor Interaction Scale with the highest marks of all the scales. When the students were asked if they had a question, the professor found time to respond, 82% answered “Always” and 18% answered “Often”. When asked if the professor responded to their questions promptly, 76% of the students answered “Always” and 24% answered “Often”. When asked if the professor gave them input on work assignment”, 54% of the students answered “Always” and 41% answered “Often”. When asked if the professor encouraged class participation, 59% of the students answered “Always” and 24% answered “Often”. Eighty-eight percent of the students thought it was “Always” easy to contact the professor concerning matters of class. Students’ input was tied at 41% for “Always” and “Often” when they were asked if they received positive and negative input on their work from the professor.

When it comes to the next scale Learner-Learner Interaction, architectural students “Often” work together on assignments but more times than not would rather work alone. When the students were asked if they and their classmates shared input on their assignments, 35% of the students answered “Often” and 29% answered “Always”. When asked if the students shared information, 47% of the students answered “Often” and 24% answered “Sometimes”. When asked if the students shared ideas, 41% answered “Often”, 29% said “Sometimes”, and 24% answered “Seldom”. When asked if they and their classmates collaborated on assignments, 35% of the students answered “Never” and 29% answered “Sometimes”. When asked if some of the activities in class involved group work, 41% of the students answered “Never”, 29% said “Seldom”, and 18% answered “Sometimes”.

Concerning the third scale Authentic Learning (real life problems), the students’ comments are mixed between “Sometimes”, “Often”, and “Always”. When asked if what was learned in class was related to real life situations, 41% of the students answered “Sometimes” and 29% answered “Often”. When asked if M-learning often related to activities they have outside of class, the students’ response was tied at 29% for “Sometimes” and “Often” and 18% said “Seldom”. When the students were asked if they used their everyday experiences in class, 35% of the students responded “always”, and the response for “Sometime” and “Often” was tied at 29%. When they were asked if they studied real life cases in class, the majority of the students (47%) said “Always” and 35% responded “Often”. When asked if class assignments involved using real world information, 47% of the students said “Always”, 29% said “Often”, and 18% said “Sometimes”.

Concerning the fourth scale Active Learning (own strategies), the majority (53%) answered “Often”, 24% said “Always”, and 12% said “Sometimes” when they were asked if they have developed their own strategy for how they learn best. When asked if M-learning allowed them to investigate topics of interest, the majority of the students (65%) answered “Always”, 29% said “Sometimes”, and only 5% answered “Always”.

Concerning the fifth scale Personal Relevance (out-of-class), students’ responses were mixed between “Sometimes” and “Always”. When the students were asked if M-learning allowed them to link class work to their life outside of school, the majority 41% answered “Sometimes”, 24% said “Always”, and 18% said “Often”. When asked if M-learning was convenient (anytime, anywhere learning), the majority of the students (53%) answered “Always”, 29% said “Sometimes”, while 18% said “Often”.

Concerning the sixth scale Student Autonomy (own decisions about learning), only one question was asked. The students were asked if M-learning allowed them to learn in their own way, the majority (41%) said “Always”, 35% answered “Often”, while 24% said “Sometimes”.

The seventh and final scale is Student Satisfaction With Mobile Learning. The majority of the students “Agree” or/and “Strongly agree” with satisfaction of their online courses. When the students were asked if they were satisfied with their online class, 53% “Agree”, while 29% “Strongly agree”. When asked if they prefer M-Learning to being in the classroom, 47% of the students “Neither disagree nor agree”, 29% agree, and 18% “Strongly agree”. The majority (47%) of the students “Agree” that they enjoyed M-Learning, 29% “Strongly agree”, while 12% “Neither disagree nor agree”. The students’ responses were tied with “Agree” and “Strongly agree” at 41% when asked if the online class enhanced their professional development; “Neither disagree nor agree” received 24% of the response. The majority (74%) of the students “Strongly agree” that they will take another online course while 24% “Agree”. And when the students were asked if questions concerning class were answered in a timely manner, the majority (83%) “Strongly agree”, while 17% “Agree”.

The first open-ended question asks the students to list the benefits of M-Learning to students. Some of their responses are shown in Table 17.

Table 17

<table>
<thead>
<tr>
<th>Students’ answer</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>It does allow me to keep my full-time job, and I can do this on the off hours.</td>
<td>GS-1</td>
</tr>
<tr>
<td>Traveling round trip to traditional classes takes a lot of time from one’s day;</td>
<td>GS-2</td>
</tr>
<tr>
<td>I can balance work and school with M-learning: re: architecture-work and school</td>
<td></td>
</tr>
<tr>
<td>compliment each other.</td>
<td></td>
</tr>
<tr>
<td>Being able to work full-time and also attend class has been a blessing. It has</td>
<td>GS-3</td>
</tr>
<tr>
<td>also been hard to find enough time to devote to the classes. It is not a matter</td>
<td></td>
</tr>
<tr>
<td>of time management but rather a matter of having enough time. I spend every</td>
<td></td>
</tr>
<tr>
<td>second I am not at work on the computer learning. This puts somewhat of a strain</td>
<td></td>
</tr>
<tr>
<td>on my family life and also any outside responsibilities.</td>
<td></td>
</tr>
<tr>
<td>As a working professional, parent, and husband, M-learning allows me the</td>
<td>GS-4</td>
</tr>
<tr>
<td>flexibility to balance my life. My undergraduate degree was earned traditionally</td>
<td></td>
</tr>
<tr>
<td>and the 1.5 hours of daily travel was not productive.</td>
<td></td>
</tr>
<tr>
<td>Allows me to work late at night, I am a night owl of personality; allows me</td>
<td>GS-5</td>
</tr>
<tr>
<td>to keep better track of assignments and due dates, accessible; Easy to source</td>
<td></td>
</tr>
<tr>
<td>information quickly; and look at many facets of a focus.</td>
<td></td>
</tr>
</tbody>
</table>

The second open-ended question asks the students to list barriers of M-Learning to students. Some of their responses are shown in Table 18.

Table 18

<table>
<thead>
<tr>
<th>Students’ answer</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Software, communication method startup</td>
<td>GS-7</td>
</tr>
<tr>
<td>You must be good at time management and “desire to learn”.</td>
<td>GS-6</td>
</tr>
<tr>
<td>Learning curve of software, due dates and times conflict with work schedules,</td>
<td>GS-9</td>
</tr>
<tr>
<td>non-verbal and gist communication are omitted</td>
<td></td>
</tr>
<tr>
<td>One thing I think is missing is being able to have that personal connection</td>
<td>GS-8</td>
</tr>
<tr>
<td>with people. Learning the personality of the teacher and all they have to offer.</td>
<td></td>
</tr>
<tr>
<td>Sometimes, the personality of a class is lost in the black and white nature of</td>
<td></td>
</tr>
<tr>
<td>the typed words.</td>
<td></td>
</tr>
<tr>
<td>The D2L (Desire2Learn) platform is very difficult to master. If that were</td>
<td>GS-11</td>
</tr>
<tr>
<td>streamlined with a D2L “orientation” class (by D2L), D2L could learn from</td>
<td></td>
</tr>
<tr>
<td>students as well. That is needed!!</td>
<td></td>
</tr>
<tr>
<td>Some problems with clarity of assignments and expectations. Some glitches in</td>
<td>GS-10</td>
</tr>
<tr>
<td>submitting assignments with audio. Some confusion with software issues,</td>
<td></td>
</tr>
<tr>
<td>including some things being hard to find or access at</td>
<td></td>
</tr>
</tbody>
</table>
times. The worst thing is trying to manage the time when our class meets online with Adobe Connect: students are not as organized and run long, making it hard to fit everyone in.

The online study system D2L—too many tabs to click to get somewhere, confusing. It took me a long time to understand where I should look for assignments, too spread out. I missed couple of assignment because of that.

It is hard to communicate with classmates and having online chats make it almost impossible to actually follow the conversation.

The third and last open-ended question asks students “How can M-Learning help students to learn”. Their comments are shown in Table 19.

Table 19

<table>
<thead>
<tr>
<th>Students’ answer</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Video or audio presentations would be great.</td>
<td>GS-14</td>
</tr>
<tr>
<td>Being able to have some video or recorded lectures that are able to be watched at a student’s leisure can be of some value because they add some personal touch.</td>
<td>GS-15</td>
</tr>
<tr>
<td>Allows students to connect with teachers at all hours of the day. Allows students to work with others around the country who are facing completely other design criterion than you’re facing in the North East.</td>
<td>GS-16</td>
</tr>
</tbody>
</table>

Both undergraduate and graduate students gave similar responses in their surveys. Both groups use the same mobile devices and learn in the same manner. Both graduate and undergraduate groups like the “anytime, anywhere learning” aspect of M-Learning and would like to improve the software.

Conclusions

We have learned that M-Learning is different from E-Learning in that individuals on their own or collaboratively can convey meaning (learning) for themselves, in a situated context, using their own mobile device. Mobile devices offer distinct advantages to education: portability, ubiquitous and affordable access, and just-in-time learning opportunities, enabling social connectivity and interactivity, personal and individualized learning experiences. It is argued that students taking online courses with high levels of interactions learn more and make better grades than students in similar face-to-face classes. Mobile learners construct their own abstract understanding of their physical and social biosphere and interact accordingly.

It has been argued by many that the best predictors of student satisfaction with online courses are: learner-instructor interaction, Internet (and software) self-efficacy, and learner-content interaction. It was also argued that gender, year in school, and learner-learner interaction were not factors in student satisfaction with online courses.

The constructivist argues that everyone has their own special learning style. It is argued that there are at least seven types of learning styles: visual, physical, aural, verbal, logical, social, and solitary. It would be safe to say that most people use a combination of styles to learn. For example, architects use visual, physical, logical, and solitary styles to learn.

This research includes two surveys: The first administrated to an undergraduate architecture design class and the second given to the graduate M-Arch class. The two surveys are different, but have some of the same questions; in which both groups of students gave similar answers, verifying the literature review. One hundred percent of the students own laptop computers and smartphones; using laptops most for school work. Most students thought M-Learning could be of use, saving time and giving them the ability to learn anywhere.
Barriers to M-Learning include Internet down, cheating, miscommunication, and lack of student motivation. The students said that they learn best with visual instruction, followed by ‘real world’ context.

The online students taking the graduate survey also use their laptops the most for school work, followed by use of their smartphones. Graduate students similar to the undergraduates said that they learn best with visual information, followed by real world contexts and third with verbal information. The graduate students appeared to be very satisfied with their learner-instructor interaction; not as enthusiastic or satisfied with learner-learner interaction; showed mixed satisfaction for authentic learning; expressed some satisfaction for active learning and personal relevance. The majority of students expressed satisfaction with student autonomy and their online class. The scales that brought the students the most satisfaction are Learner-Instructor Interaction, Active Learning, Student Autonomy, and Satisfaction with M-Learning.

The graduate students lists “anytime, anywhere learning” as one of the major benefits to M-Learning. Some of the barriers to M-Learning mentioned were: software, missing personal connections, communication, and D2L. Students commented that video and recorded lectures along with online D2L classes would help improve M-Learning.

In conclusion, M-Learning and online classes appear to be here for good and will increase in volume. Everyone has their own learning style(s), M-Learning for architectural students should include more visual and real world contexts, followed by verbal information for best results. Interaction between teacher and student, real world problems, and making their own decisions about learning give architectural students the most satisfaction with M-Learning. The next step for this research would be to develop D2L learning classes for students, include more visual information, videos, and recorded lectures for students. Increasing instructor-learner interaction is the greatest single item for M-Learning success.

References

Ally, M., & Samaka, M. (2013, June). Open education resources and mobile technology to narrow the learning divide. International Review of Research in Open and Distance Learning, 14(2).


Abstract

Energy Transformation is an experiential science middle school enrichment curriculum that addresses essential standards in science while teaching students about energy conservation and efficiency (Kirby & Chilcote, 2014; Chilcote & Kirby, 2012). The curriculum is divided into six unique modules. Each module builds upon the previous one, as students gain greater understanding of energy in their home. As students progress through the learning modules, they are actively engaged in building their own “model” house out of cardboard. Once complete, this model house is used to test various principles that are introduced throughout the modules. The six modules include: 1) Energy Makes the World Go Round, an exploration of renewable and nonrenewable energy resources; 2) It Just Makes Cents, presents information on energy efficient lighting choices and associated; 3) Power Up, Power Down investigates electrical switches and phantom energy use; 4) The Heat Is On focuses on the basics heat flow and heat transfer through convection, conduction, and radiation; 5) Don’t Lose Your Cool allows student experimentation with principles of air movement and air leakage; and 6) It’s a Wrap reinforces the concept of
heat transfer and identifies strategies for reducing heat flow. Each module allows students to experiment and learn about energy efficiency and conservation using a model house, but also provides students with applicable concepts for their real home. Energy conservation behaviors and simple home retrofits (e.g. using energy efficient light bulbs) are emphasized so that students can put into practice the concepts they have learned while working through the curriculum.

Thus far, eight counties in North Carolina have used the Energy Transformation curriculum in a school or camp setting. Teachers implemented the curriculum in the spring and summer of 2014. Researchers provided teachers with a survey questionnaire to be given to students, either online or paper copy, in order to assess the effectiveness of the curriculum in changing student knowledge (Kirby, Guin, & Chilcote, 2014). The instrument asked students to designate their level of agreement with a series of statements that related to what they were exposed to in the curriculum. The scale was as follows: 1= strongly disagree, 2 = disagree, 3= neutral, 4= agree, and 5= strongly agree. Student questionnaires revealed that students increased their energy literacy in all concepts addressed by the six modules. In addition to the knowledge increases in energy literacy, students were also queried about what they liked most and least about the Energy Transformation curriculum. The least liked part of the curriculum was the difficulty making the house and the amount of time it took to work through the curriculum. The most popular activities in the curriculum were experiential in nature and included the testing of the model home for air leakage (Kirby, Guin, & Chilcote, 2014).

Results provide evidence of students learning important concepts related to energy efficiency and conservation. Findings to indicate that students are familiar, at some level, with the many of the energy concepts, therefore it is essential for project directors to augment the modules with additional multifaceted experiments and to expand subject matter for those students who already possess energy literacy knowledge (Kirby, Guin, & Chilcote, 2014). The Energy Transformation project carries on with additional data collection on knowledge increases and behavioral changes from student participants. Additional opportunities for teachers to be trained in
the use of the curriculum will take place in the late fall of 2014, allowing for greater impact to be measures. Project directors are also gathering data from teachers who implement the curriculum.

References:


This project was sponsored by the Progress, Duke Energy, and the Piedmont Natural Gas Foundation.
The demographic divide between students and teachers in today’s culturally diverse schools continues to widen. While students represent increasingly more diverse affiliations, teachers continue to be predominantly White. This disparity places a critical onus on Teacher Education programs attempting to train culturally responsive teachers for our ever-changing schools (U. S. Department of Education, 2010). In previous decades, preservice teacher training programs approached multicultural content in the form of one or two specific courses (Kritzer & Ziebarth-Bovill, 2012). Often these courses did not feature a hands-on experience, and if they did, it usually consisted of simple observation. Two noteworthy problems with this approach have been determined. First, it is not feasible to prepare culturally aware and culturally responsive preservice teachers with a one-shot course. Research has continually highlighted the need for a program-wide effort with culturally relevant teaching immersed in all courses (Reiter & Davis, 2011). Second, instruction has to be as authentic as possible. Thompson and Catapano (2013) suggest field experiences in diverse settings as the most beneficial teaching tool in preparing teachers to gain cultural awareness and responsiveness. However, Bell, Horn and Roxas (2007) caution that field experiences without purposeful opportunities for critical reflection can be futile. This study attempts to examine the following questions:

1. How culturally aware are a group of preservice teachers in their final course before internship?
2. Do preservice teachers feel they are adequately prepared by their Teacher Education program to teach in diverse settings?
3. What attitudes and beliefs do preservice teachers describe as critical when placed in a diverse teaching setting?

Participants were 20 preservice teachers completing a 15-hour field experience as part of an undergraduate course entitled “Physical Education in Elementary Schools.” All participants were female with a mean age of 20–23 and enrolled in an Elementary Education program in the southern part of the United States. The preservice teachers were in their last semester of coursework together as a sustained cohort prior to internship. Data collection included a demographic questionnaire, pre- and post-administration of the Cultural Diversity Awareness Inventory (CDAI), and small group interviews before, during and after the field experience. Demographic data revealed all 20 preservice
teachers were White females, who predominantly attended White, suburban, middle-class high schools (n = 16 out of 20). Preliminary results suggest all preservice teachers believed they were well-prepared for teaching in diverse environments. Specifically, 100% of the 20 preservice teachers agreed (n = 12; 10) or strongly agreed (n = 8; 10) with the two following statements respectively: (1) My coursework has encouraged me to respect cultures that are different from my own; and (2) My coursework has provided me experience interacting with persons from other cultural backgrounds. Results of the pre- and post- CDAI will be entered into SPSS to produce descriptive statistics. Interviews will be coded using constant comparison to determine emerging themes. Final results and conclusions will be presented during this conference session.

Please e-mail your attachment to:
education@hiceducation.org

Poster sessions will last 90 minutes and consist of a large group of presenters. Poster sessions allow attendees to speak with the presenters on a one-to-one basis. If you are scheduled for a poster session, the following supplies will be provided:
- Easel - Tri-fold display board (36 x 48 inches)
- Markers - Push pins
- Tape
1. ABE/GED Train the Trainer-Go Motivate! Effective strategies for Adult Educators to improve retention and motivation among ABE/GED adult learners
2. Lynn Taylor, MBA, PhD Candidate
3. Texas State University
   College of Education- Adult, Professional & Community Education
4. Open
5. Email: l_t45@txstate.edu
6. The goals of the instructional workshop is to provide ABE adult educators with practical solutions, innovative and effective strategies to implement in the classroom to motivate, retain and engage ABE/GED learner’s background knowledge. Participants will understand the factors that affect adult learning such as learning preferences, characteristics of nontraditional learners, key motivators, personal and environmental barriers and stressors. Adult Learning Theory and the role ALT plays in ABE/GED student motivation, persistence and retention will be discussed.
High School Mathematics Teachers’ beliefs on Teaching with Technology in China

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Abstract

The article explores mathematics teachers’ beliefs on teaching function with technology and the relationships among different belief components. It describes a case study of five mathematics teachers, who are mathematics teacher expert on technology use in high school. Data analysis reveals five themes. They are beliefs on function understanding, beliefs on technology, beliefs on instruction, main points for technology-rich mathematics class, and benefit for students. The findings indicate that mathematics teachers’ beliefs on technology, beliefs on instruction, and beliefs on function understanding are central beliefs on teaching with technology. Active attitude towards technology, long-term view on education, and the awareness of knowledge updating are the foundation for technology use in mathematics classroom. Professional development programs are still needed in order to provide mathematics teachers with technology use experience.

1. Introduction

In the digital age, information and technology play an important role in various social strata and all walks of life. In terms of mathematics education, the extensive application of information and technology has made a deep influence on lots of aspects of mathematics education, including mathematics curriculum content, mathematics teaching, and mathematics learning. Many research results showed that the appropriate usage of technology (e.g. graphing calculator, geometer sketchpad) helps students a lot in terms of mathematics understanding, mathematics thinking and mathematics learning interests. (Hembree & Dessart, 1992; Smith, 1997; Ellington, 2003; Brown, Karp, Petrosko, Jones, Beswick, Howe, & Zwagnig, 2007.) Integrating mathematics curriculum with technology has been a tendency for mathematics education in the world. Following this tendency, officers in Chinese Ministry of Education encourage mathematics teachers to teach mathematics with technology in classroom. “Emphasizing on the integration of technology and mathematics curriculum” has become one of the ten basic conceptions in the new mathematics curriculum reform in China. Specifically, this view has been clarified in the newest Mathematics
Curriculum Standard for High School (2003) as “Information and technology should be effectively integrated into mathematics curriculum in high school, in order to help students realize the nature of mathematics. Information and technology should be used for mathematics contents that are difficult to be shown in traditional teaching. Mathematics teachers should keep manual computation practice, meanwhile, try to adopt scientific calculators and mathematics educational technology in class; and encourage students to explore mathematics with calculators and computers.”(p.5)

Practically, integration doesn’t mean simply add technology into traditional mathematics teaching; instead, it will trigger changes from many aspects of mathematics teaching. Teachers are in need of considering some basic educational questions in a new way. For instance, what contents are appropriate for teaching with technology? What teaching strategies should be adopted in order to teach with technology effectively? How to evaluate the result of teaching with technology? Under the circumstances, some mathematics teachers can actively reflect on their instruction in the new way and try to explore effective teaching approach in practice; however, some teachers still teach in the old way, rejecting to use technology or just focusing on imparting mathematics knowledge and mathematics skills to students.

As we all known, teachers, as curriculum designers, play an important role in the process of implementing curriculum conception. Researchers corroborated teachers beliefs exert a critical influence on teaching behaviors (Ernest, 1989; Thompson, 1992; Schmidt, 1998); and teachers’ beliefs about teaching with technology affect their behaviors on technology use (Terranova, 1989; Schmidt, & Callahan, 1992). Thus, if we want to know teachers’ usage of technology, we will detect teachers’ beliefs on teaching with technology firstly.

Belief was defined as “Psychologically held understandings, premises, or propositions about the world that are thought to be true.” “Beliefs might be thought of as lenses that affect one’s view of some aspect of the world or as dispositions toward action.” (Philipp, 2002, p.259.)

Researchers in the West began to study mathematics teachers’ beliefs on teaching with technology in 1990s. Terranova & Schmidt (1989) designed a questionnaire from three dimensions: student learning (including thinking & reasoning, affective domain, skills, general cognitive domain, and equity effects.), curriculum & instruction (including methods, objectives, and time.), and outside presses on calculator use (including inservice, testing, administration, teachers, upkeep, district support, tradition/society, publisher, and parental support.), in order to explore elementary school principals’ and teachers’ beliefs about calculator use. They found that teachers and principals believed that calculators should be used in elementary mathematics. Teachers appeared to be harboring fears about the effects of the use of calculators on students’ learning. Teachers and principals felt that inservice programs were needed.

Schmidt (1998) studied thirty-two mathematics teachers’ beliefs about calculator with the same questionnaire. Research results showed that teachers’ beliefs about calculators reflected their more traditional views about mathematics. Mathematics teachers strongly supported the idea of calculator use; however, many were uncertain about whether students who used calculators learned mathematics better than those students who do not use them. Other factors such as testing, parental support, and district policy, also influenced teachers’ beliefs about calculators.

Leatham (2002) did a new exploration. She adopted interview and observation to explore preservice secondary mathematics teachers’ belief system on teaching with technology. Data were analyzed based on grounded theory. Results indicated that there were four dimensions in teachers’ belief system: (1) The ownership of learning mathematics with technology. Experience, knowledge, and confidence were the primary factors that constituted ownership. (2) The nature of technology in the classroom, which included the availability of technology, the purposeful use of technology, and
the importance of teacher knowledge of technology. (3) Roles of technology in the classroom, which included motivation roles, procedural roles, and conceptual roles. (4) Concerns about using technology, which included teachers’ responsibility and students’ responsibility.

Brown et al. (2007) investigated K-12 teachers’ beliefs regarding calculator use in mathematics instruction. Factor analysis revealed four factors that described meaningful dimensions related to teacher calculator use. The first factor was Catalyst Beliefs which described beliefs in the positive effects of calculators on student learning. The second factor was Teacher Knowledge, measuring the perceived adequacy of the teachers’ training in using calculators. The third factor was Crutch Beliefs related some negative effect of using calculators. And the last factor was Teacher Practice, measuring teacher’s using calculators as a limited classroom tool. Data analysis also indicated that compared to elementary teachers, high school teachers were significantly higher in their perception of calculator use as a catalyst in instruction.

To date, it was still lack of researches in this field in China, especially, the qualitative research to examine the lived mathematics teachers’ beliefs on technology use in high school.

The purpose of this study is to gain a deep understanding of mathematics teachers’ beliefs on teaching with technology in high school in China. It is a qualitative research. Given that case study is an in-depth study of a bounded system or case (Creswell, 2012), it was chosen as the approach of present study. At this stage in the research, mathematics teachers’ beliefs on technology use will be generally defined as the predispositions to the action of teaching mathematics with technology (e.g. Graphing Calculator, Excel, Geometer Sketchpad, GeoGebra, Power Point, Flash, Internet, Projector, etc.).

In the present research, the central research question was: What are mathematics teachers’ lived beliefs on teaching with technology in high school in China? In order to address this central question, three sub-questions were put forward: What belief components on technology use can be identified from mathematics teacher experts on teaching with technology? What’re specific belief items in each component? What relationships exist among these components?

2. Methods
2.1 Research design
Creswell (2012) stated that a case study is a qualitative approach in which the investigator explores a real-life, contemporary bounded system (a single case) or multiple bounded cases over time, through detailed, in-depth data collection involving multiple sources of information (e.g., observations, interviews, audiovisual material, and documents and reports), and reports a case description and case themes (p.97). Typically, this design includes three variations in terms of intent: the single instrumental case study, the collective or multiple case study, and the intrinsic case study (Creswell, 2012). In the multiple case study, one issue is selected, then the inquirer selects multiple case studies to illustrate the issue (p.99). In order to explore mathematics teachers’ lived beliefs about teaching with technology and get an in-depth understanding of it, multiple case study approach was selected. In this study, the case refers to some active mathematics teachers that try to explore how to teach mathematics with technology and actually use technology effectively in teaching mathematics in high school in China. Considering that function is the core mathematics content in high school, it was chosen as the content in present research.

2.2 Participants
In a multiple case study, the recommended sample size is no more than 4 or 5 in a single study, which can provide ample opportunity to identify themes of the cases as well as conduct cross-case
theme analysis (Creswell, 2012, p.157). A sample size of 5 mathematics teachers in high school was adopted.

In order to gather the information-rich cases, purposeful sampling methods (Creswell, 2012) were adopted, primarily criterion sampling and snowball sampling. Criterion sampling refers to picking cases that meet some prespecified criterion (p.158). Given that we want to identify the belief components about technology use from mathematics teachers who are experts on teaching with technology, the criteria for the participants in this study were (1) being a mathematics teacher in high school; (2) five or more years’ experience of teaching mathematics with technology; (3) attending at least one professional development program in this field, such as graphing calculator program, white broad program; (4) having plentiful teaching experience with technology for being able to teach effectively and winning prizes in teaching contests on technology use at the municipal level or beyond; (5) engaging in high school education research and being able to write teaching experience summaries, scientific reports and research papers in this field; (6) nominated by a mathematics educator or mathematics educational expert. Participants also were recruited by snowball sampling (Creswell, 2012) based on the criteria mentioned above. Three participants were appropriate cases. Then we asked for their help to provide more information about appropriate cases for this study. Finally, five high school mathematics teachers were identified as expert teachers on teaching mathematics with technology. They were invited (and thus agreed) to participate in this study. All participants were informed that data collection was for research purposed only. Table 1 showed background information of five participating teachers.

Table 1 Background information of the five participating teachers

| Teacher | Education degree | Teaching experience | Teaching grade | Award | Participation of teacher PDPs |
|---------|------------------|---------------------|               |       |                             |
| T1      | Bachelor         | 23 years            | 10-12         | First prize of teaching mathematics with technology contest (N and C levels) | Educator in the future (N level) |
| T2      | Bachelor         | 24 years            | 10-12         | First prize of teaching mathematics with technology contest (N level). First prize of teaching mathematics with graphing calculator contest (N level) | Expert member in program of the integration of hand-held technology and mathematics curriculum (N and C levels) |
| T3      | Bachelor         | 16 years            | 10-12         | First prize of teaching mathematics with technology contest (C level) | Expert member in program of the integration of hand-held technology and mathematics curriculum (N and C levels) |
| T4      | Master           | 9 years             | 10-12         | First prize of teaching mathematics with graphing calculator contest (N level) | Program of the integration of technology and mathematics curriculum |
T5  Master  5 years  10-12  Second prize of teaching mathematics with technology contest (C level)  Program of the integration of technology and mathematics curriculum (N level)

Note. PDP denotes Professional Development Program. C and N mean City and National levels respectively.

Table 1 showed that all five participants held a bachelor’s degree in mathematics, two also with a master’s degree in mathematics education. These teachers had an average of 16 years’ teaching experience, ranging from 5 to 23. All of them won various awards in teaching contests on technology use at the municipal or national level. They also participated in a variety of professional development programs (PDPs) on technology use.

2.3 Data Collection
A semi-structured interview protocol was the primary study instrument in this research. Data were collected through face-to-face interviews, which lasted 41 minutes, 33 minutes, 39 minutes, 54 minutes, and 26 minutes respectively. Teachers were asked the questions listed in the interview protocol about their beliefs on teaching function with technology. All the questions were designed open-ended. For instance, do you think technology, including Graphing Calculator, Excel, Geometer Sketchpad, GeoGebra, Power Point, Flash, Internet, Projector, etc., is necessary for teaching function in high school, and why? What aspects will you pay attention to when you design a technology-rich mathematics class? What do you want your students to obtain through a technology-rich mathematics class? Which aspects will you emphasize mostly when you evaluate a technology-rich mathematics class? We also asked emerging questions to further explore the participants’ lived experiences and feelings about the topic. The interview conversations were recorded on a digital voice recorder with the permission of participants.

2.4 Data Analysis
These expert teachers’ interview conversation was taken as main data source for this analyses in this study. All the data were analyzed in the original language of Chinese. In particular, these teachers’ conversations were transcribed verbatim, along with the time recording for all the dialogue that happened in these conversations.

To address our research questions, we analyzed our verbatim following three steps: open coding, creating categories and themes, and finding relationships among themes.

**Open coding.** In the first step, verbatim were read several times. We used one word or one phrase to summarize the idea of a sentence or a paragraph. Double-coding method was adopted in order to enhance the reliability of the research. At the beginning, both of us wrote codes for T1 and T2’s conversations, so that we can clarify the meaning of each code. Then, we coded separately, one for T3 and the other for T4 and T5. Finally, 58 codes were generated.

**Creating categories and themes.** We segmented these codes into 16 categories. Constant comparison within and across cased method was used to develop and saturate categories (Corbin & Strauss, 2008). Then, we compiled categories into 5 major themes, including understanding function, beliefs on technology, beliefs on instruction, benefit for students, and main points for technology-rich mathematics class. **Understand function** included connections to other mathematics contents, conception, property and application, and change. **Beliefs on technology** included active
attitude, integration of different technologies, and teachers’ technology use. Beliefs on instruction included long-term view, knowledge update, teaching approach, teaching mathematics, and students’ ability on using technology. Benefit for students included enhancing students’ interests, helping students’ understanding mathematics, visual and credible, and opportunities for discovering and exploring mathematics. A list of themes, categories and examples was provided in Appendix 1.

Finding relationships among themes. Then, we developed reasonable relationships among these themes.

3. Findings

Data analysis led to five central themes that related to mathematics teachers’ beliefs on teaching with technology. Five central themes and relationships among them were described as follow.

3.1 Understanding function

Content knowledge is the basic teacher knowledge for effective teaching as well as technology-rich teaching. In our study, we asked teachers to talk about their understanding on function, so that we can identify teachers’ beliefs on function.

All of five mathematics teachers mentioned that function is the consistent thread running through many mathematics contents in high school, such as sequence, statistics, derivative, and conic curve. Take sequence as an example, arithmetic progression can be regarded as a special discrete linear function with respect to variable and geometric progression can be regarded as a special discrete exponential function with respect to variable. It is easier for students to learn sequence from the perspective of function and to explore these connections with the help of technologies. T5 showed us an example in her teaching practice to illustrate teachers’ emphases on function’s connection with sequence:

E.g. Arithmetic progression \(\{a_n\}\), explore the value of with graphing calculator.

"This question was designed for students to explore the connection between linear function and sequence. Typically, students chose several specific sequences, such as \(a_n = 3n - 1\); input it in the Sequence Applet; observed the value of this sequence (Fig.1), and did some simple calculations. It was easy for them to find that the solve of this expression is a constant. The value of this constant is equal to the difference of the sequence. Then, we asked students ‘why it is equal to the difference’ and asked them to plot this sequence (Fig. 2). We tried to help them to understand the meaning of difference based on the plot of this sequence. Further, we asked students to make an analogy between arithmetic progression \(a_n = 3n - 1\) and linear function \(y = 3x - 1\), meanwhile, identify the connection of difference \(d = 3\) and slope \(k = 3\). "

Figure 1: Table

Figure 2: Plot
Emphasizing on the application is another feature in teachers’ beliefs on function. Students do learn lots of knowledge about function, such as the conception, parity, and monotonicity. They also learn many special functions, such as exponent function, logarithmic function, power function and trigonometric function. However, remembering the conception and property of each kind of function is not the goal of teaching. Importantly, teachers should help students know why they need to learn these and what the application of the function is. Function is a mathematics tool (mathematics model) that helps us to solve real world problems. For instance, we can use exponential model to explore the population of a bacteria. The purpose of teaching function is to make students strong enough to model real questions with function; is not about memorizing formulas, memorizing property of the function, or calculating the monotone interval.

In addition, teachers also mentioned the importance of experiencing “change” in learning function. Take exponent function as an example, in order to explore the property of this function, teachers typically ask students to plot some function graphs and observe that how do graph change with the change of bottom number $a$. Then, summarize the change regulation and get the property of this function. It is important to let students experience “change” in their function learning.

Interview results indicated that connection, application and change were three common features in teachers’ beliefs on function understanding.

3.2 Beliefs on technology
Active attitude is the common feature in all five teachers’ beliefs on technology. As T3 addressed her attitude “I really want to explore and attempt new things (technology) because everything is in the process of changing and developing… If you continue in the same old rut, how can you teach students with the updated knowledge and new learning style?” T4 said “It is undoubted that information and technology promote the development of both mathematics and mathematics education.” T1 reported her attitude on technology in classroom “In my opinion, in the digital age, technology determines destiny. It is natural that technology should be used in the mathematics classroom.” It is active attitude that motivate teachers to explore the educational value of technologies and try to use them in mathematics teaching.

Meanwhile, teachers realized that different technologies have different functions. For example, PowerPoint is good for showing static words and graphs; Geometer Sketchpad is good for dynamic plotting; Graphing Calculator is a kind of hand-held technology, so it is convenient for students to explore mathematics by themselves. “Teachers need to know different functions (Applets) of different technologies and choose them appropriately for different mathematics contents. That’s a capacity do teachers need in a technology-rich mathematics class.” T3 said.

When we asked teachers “How can you use these technologies”, the answers were similar “learn from the professional development programs or learn by ourselves”. It is interesting that four out of five participants stated “students learn how to use technologies really faster than teachers.” T1 commented this phenomenon, which implied her beliefs on technology as a mathematics teacher.

\[
A \text{ mathematics teacher, different from a technical expert, should give more attention to the educational value of technology than technology itself. As we all know, a technical expert is proficient in operating various technologies; however, they may feel quite helpless in the face of helping students learn mathematics with technologies.}
\]
Mathematics teachers may not be an expert on technology use, but should be an expert on the integration of technology and mathematics curriculum. We should create some contexts or inquiry questions in order to arouse students’ interests in mathematics exploration; and help them change learning style in a new and effective way.

3.3 Beliefs on instruction
Mathematics teachers’ beliefs on instruction directly affect teaching behaviors. Generally, mathematics teachers who are willing to integrate technology with mathematics education typically take a long view with focusing on students’ all-round development. “Mathematics teachers should reflect the value of technology in the long run instead of just emphasizing on the examination.” T1 said, “In practice, teachers do not want to use technology if they just take care of the result of examination, because traditional Chinese mathematics teaching approach is not a bad choice for passing examination. However, the purpose of education is to promote the all-round development of students. Examination is just an approach to evaluate the learning results. It is absolutely not the goal of education.”

Moreover, it’s not a judicious and effective strategy that only focus on imparting large amounts of knowledge and skills to students in the stage of basic education in the information age. As an old Chinese proverb said “Give a man a fish and he can eat for a day; but if you teach him how to fish, he'll eat for a lifetime.” Teachers should provide students with some learning opportunities and effective learning tools to help them grasp learning approach and make them strong enough to point mathematics questions and solve them by themselves. T2 illustrated it with a vivid example.

In an open-ended mathematics task, T2 asked students to choose a mathematics problem in their daily life and solve it with the knowledge of function. Students could discuss their ideas in the study group and do it with the help of any kind of technology. T2 said: “I was really surprised by students’ works”. One group designed a clock with the function of programming in graphing calculator. They wanted to design a clock that when you enter the time (Fig. 3,4) the needle of the clock will point to the right direction (Fig.5) and the time will be showed in a message box (Fig.6).

![Figure 3: Input hour](image)

![Figure 4: Input minute](image)

![Figure 5: Clock](image)

![Figure 6: Message box](image)

The main problem in this task was how to design the hour hand and minute hand of the clock. Students need transfer the value of the time into graph. In order to solve this problem, they adopted
the knowledge of trigonometric function to achieve this transformation. Here’s the programming they made. (Fig. 7, 8)

In fact, this task is not easy for first-year high school students. Sometimes, students are potential if teachers can provide them with an appropriate learning opportunity. “As a teacher, I just provide them an opportunity to solve real world problem with mathematics knowledge. They are really interested in it and cooperate with each other to solve the problem.” T2 said, “In the daily teaching practice, I emphasis on the application of mathematics knowledge. I try to ask students to use mathematics knowledge, not memorize mathematic knowledge.”

3.4 Benefit for students
Technologies have varied functions, including calculation, plotting, doing statistics, programming and so on. We summarized the advantages of technology for students’ mathematics learning in the light of interview recording. Helping understand mathematics, motivating mathematics learning interests, visual and credible, and providing opportunities for discovering and exploring mathematics were top four advantages mentioned by teachers. When T4 talked about it, she excitedly showed us her students’ works. Here is a paragraph of mathematics diary written by T4’s students, which implied his exploration process with graphing calculator on coefficients of trigonometric function.

“When I study trigonometric function $y = A \sin \omega (x + \varphi) + B$ in the second semester, I found that there are many coefficients in this function, which affect the shape of function graph. With the help of graphing calculator, I can explore it by myself. For example, I plot a series of function graphs: $F1(x) = \sin(x)$, $F2(x) = 5\sin(x)$; $F3(x) = \sin(5x)$; $F4(x) = \sin(x + 5)$ (Fig. 9,10,11,12). I found coefficient $A$ controls the height of the graph; coefficient $\omega$ controls the width of the arc; and coefficient $\varphi$ affects the horizontal translation of the plot; and coefficient $B$ controls the vertical translation of the plot. The wave-shaped graph changes when coefficients have been changed...Graphing calculator can make these varieties visible. I’m interested in finding the relationship...
between coefficients and the graph with graphing calculator and sharing my experience with my classmates. Moreover, the result also can be used in physical class.”

Figure 9: sin(x) and 5sin(x)  
Figure 10: sin(x) and sin(5x)  
Figure 11: sin(x) and sin(x+5)  
Figure 12: sin(x) and sin(x)+5

Then, T4 expressed her feeling about this case with a comparison with traditional mathematics teaching, which indicated her beliefs on technology’s educational value.

“In the traditional mathematics class, we couldn’t provide students with enough time to draw different function graphs when we discuss the property of function. Typically, we asked students to use five-point method to draw two or three graphs with pencil and paper, which might cost 10-15 minutes. Then, they attempted to summarize the change regulation and property only based on these two or three graphs. In the technology environment, especially with graphing calculator, students can do this both in class and out of class. Importantly, they are really willing to do this. I find that their interests in mathematics have been motivated. It is really an exciting thing.”

3.5 Main points for technology-rich mathematics class
Participants’ beliefs on a well-designed technology-rich mathematics class can be concluded from two aspects: teaching design and students’ engagements.

On the one hand, teachers believed that teaching design is the key for a well-designed technology-rich class. Some mathematics teachers, especially experience-rich mathematics teachers in the traditional education, have formed their relatively fixed mathematics teaching style which is more or less difficult to change. In the technology environment, teachers cannot simply add technology into traditional mathematics teaching. They have to redesign the curriculum and teaching in a new way. It is a challenge for teachers. Participants in our study addressed that when they design or evaluate a technology-rich mathematics class they will reflect that are technologies used appropriately? In order to get the answer to this question, they typically think about some further questions. For example, what’s the instructional goal in this class? Do technologies benefit
the achievement of instructional goal? Do teachers keep the balance between blackboard-writing and technology usage? Do teachers clarify the key point and difficult point with the help of technology in this class?

On the other hand, teachers focus on students’ engagement and students’ learning style, as T3 addressed her experience:

*I remember I’ve observed a technology-rich mathematics class last year. It was a class about function. They talked about the conception of function. It was one of the first several classes in the first semester in high school. The teacher integrated that class with PowerPoint. However, that teacher only used PowerPoint to show the conception of function and show some exercises. The teacher just moved the contents from blackboard to the screen. There weren’t changes happened regarding students’ learning style or engagement. For this case, I don’t think it is a technology-rich mathematics class, even though the software PowerPoint was adopted.*

### 3.6 Relationships among themes and categories

We also identified the relationships among the themes and categories and displayed them in a paradigm (Figure 13).

For five themes and sixteen categories in this study, we regarded three themes and its categories as the core beliefs on teaching with technology, including beliefs on technology, beliefs on instruction, and beliefs on function understanding (showed in the grey box). The first two rectangles at the top of the grey box represented the general beliefs about technology and instruction. Teachers, who have an active attitude on technology usage, the long-term educational goals, and the awareness of updating knowledge, are willing to explore the usage approach of technology in mathematics class. However, it is not enough. If a teacher wants to teach function with technology effectively, she/he must integrate these beliefs into her/his understanding on function. Then, some specific beliefs on teaching function with technology are formed, such as integrating different technologies, teaching approach. All of these compose the center of the belief system. Further, the central part affected the other two themes: main points for technology-rich mathematics class and benefit for students. We found that students were the focus in teachers’ beliefs.

Themes and categories in this belief system connect with each other, playing a significant role in teachers’ decision-making on teaching function with technology.
4. Discussion and conclusion

The research presented in this article explored mathematics teachers’ beliefs on teaching with technology and the relationships among different belief themes. This starting point serves as the basis for discussion of some problems about technology use in mathematics class in China.

Firstly, the active attitude towards technology, the long-term view on education, and the awareness of knowledge updating are the foundation for teaching with technology. The integration of mathematics curriculum with technology is a basic conception in the newest mathematics curriculum reform. The interviews results showed that all of the interviewees agree that technology is very important and helpful in mathematics teaching. However, some mathematics teachers still reject or are unwilling to use technology in practice because of their emphasis on examination. They begrudged the time spent on exploring mathematics with technology in class. It is a serious problem in China. It is truly that Chinese mathematics education is still in the process of a transition from examination-oriented to students’ development. Teachers are in need of thinking about this problem in the long run. Focusing on examination is improvident.

Secondly, our research result indicated that mathematics teachers’ beliefs on technology, on instruction, and on function understanding are central beliefs on teachers’ teaching with technology. They are interrelated and interact on each other. Teachers’ learning experience, professional development programs, working environment and peer motivation are important factors for the formation of these beliefs.

Finally, professional development programs are needed. To realize the vision for technology use encouraged by many organizations all over the world, the use of technology in mathematics

![Figure 13: Relationships among themes and categories](image-url)
teacher training programs must increase. Our research indicated professional development programs on teaching mathematics with technology do exert positive impact on teachers’ beliefs and teaching practice on technology. Mathematics teachers are in need of knowledge about technology. Meanwhile, mathematics teachers also need access to best practices for incorporating technology in professional development programs. As Timmerman’s (1999) research result mentioned, teachers need to have a comfort level of learning mathematics with a technology tool before they feel comfortable using that technology with students. Therefore, mathematics educators still need to think how to design appropriate professional development program in order to provide preserve and inserve mathematics teachers with opportunities of using technology and satisfy their specific needs in tomorrow’s classroom.

References

**Appendix 1:** The Themes, categories and Examples of teachers’ beliefs on teaching mathematics with technology

<table>
<thead>
<tr>
<th>Themes</th>
<th>Categories</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Understanding function</td>
<td>Connections to other mathematics contents</td>
<td>Function is the core of mathematics in high school. It can be regarded as a bridge that connects all the mathematics contents in high school except solid geometry. (T4)</td>
</tr>
<tr>
<td></td>
<td>Conception, property and application</td>
<td>The conception and property is the foundation of a function. Students also need to know how to use function to solve real world problems. (T2)</td>
</tr>
<tr>
<td></td>
<td>Change</td>
<td>Change is very important in function learning. Technology, such as graphing calculator, can make it visual. (T5)</td>
</tr>
<tr>
<td>Beliefs on technology</td>
<td>Active attitude</td>
<td>I really want to explore and attempt new things (technology) because everything is in the process of changing and developing. (T3)</td>
</tr>
<tr>
<td></td>
<td>Integration of different technologies</td>
<td>Different technologies have different functions. Teachers need to know which is better for specific mathematics content. Teachers should know how to choose. (T2)</td>
</tr>
<tr>
<td></td>
<td>Teachers’ technology use</td>
<td>Typically, we learn how to use technology by ourselves and we find that students learn faster than us. Teachers need to think the educational value of technology. (T2)</td>
</tr>
<tr>
<td>Beliefs on instruction</td>
<td>Long-term view</td>
<td>Mathematics teachers should reflect the value of technology in the long run instead of just emphasizing on the examination. (T1)</td>
</tr>
<tr>
<td></td>
<td>Knowledge update</td>
<td>In the digital age, knowledge updates so quickly. As a teacher, we should not only teach students knowledge, but also tell them how to obtain knowledge. Technology is an effective approach to reach this goal. (T1)</td>
</tr>
<tr>
<td></td>
<td>Teaching approach</td>
<td>Technology provides opportunities to do mathematics, so it does well to student-center learning. (T5)</td>
</tr>
<tr>
<td></td>
<td>Teaching mathematics</td>
<td>As a mathematics teacher, when I teach students mathematics knowledge and skills I also try to show them the beauty of mathematics. Technology can help me to do that. (T4)</td>
</tr>
<tr>
<td>Benefit for students</td>
<td>Enhancing students’ interests</td>
<td>High school students are interested in computers and technologies, so teaching with technology can enhance student interests in mathematics. (T1)</td>
</tr>
<tr>
<td>----------------------</td>
<td>-------------------------------</td>
<td>----------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Helping students’ understanding</td>
<td>When mathematics is visual, it is easier for students to understand it. Technology can make mathematics visual. (T3)</td>
<td></td>
</tr>
<tr>
<td>Visual and credible</td>
<td>In traditional teaching, for some composite functions, students only can image the function graph or plot a rough function graph by drawing five points and connecting them with a curve. Now, students can solve this problem with technology. (T2)</td>
<td></td>
</tr>
<tr>
<td>Opportunities for discovering and exploring mathematics</td>
<td>Some Applets in graphing calculator, such as programming, can open students’ mind and provide opportunities of doing mathematics. One of my student made a song with the programming Applet. (T4)</td>
<td></td>
</tr>
<tr>
<td>Main points for technology-rich mathematics class</td>
<td>Teaching design</td>
<td>Some teachers just use PowerPoint to show the conceptions, questions, or procedures. I don’t think it is teaching with technology. Instruction need to be redesigned in the technology environment. (T2)</td>
</tr>
<tr>
<td>Students’ engagements</td>
<td>Students’ engagement is an important factor to evaluate a technology-rich mathematics class. (T1)</td>
<td></td>
</tr>
</tbody>
</table>
1. Title of the submission.
   a. Target Instruction with Precision Language; a systematic approach on how to evolve diversity to celebrate success, in light of challenges and obstacles

2. Name(s) of the author(s),
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Abstract

13th Annual International Conference on Education

Highlighted Model School Presentation Outline:

Target Instruction with Precision Language; a systematic approach on how to evolve diversity to celebrate success, in light of challenges and obstacles

Wengert Elementary is a unique Dual Language School of 90% of students at poverty level, over 80% are English Language Learners and over 85% are of Hispanic Ethnicity. 85% of incoming students are non-English Speakers and academically are non-proficient. The instructional culture at Wengert Elementary school has evolved through the years to a systematic and measurable procedural approach labeled as “Target Instruction for Language Development, Language Delivery with Intention.” This is a multi-venue of methodical procedural practices and a common belief of what works for our students, serves as a guiding format in thoughtful planning, measurable goals, systematic implementation, and a collaborative precise-delivery of students’ and teachers activities. Two practices are highlighted, one is an academic focus of Teachers’ Designed Collaboration Format, and the second is of students’ Anti Bullying Initiative identified as Wengert Safety Officers’ Patrol Club.

Academically, a Dual Language Spanish/English content-academic model is implemented K-5 to support the needs of ELL. Grade level teachers collaborate weekly, according to Teachers’ Designed Collaboration Format, to share best practices and make instructional decisions based
on students’ needs. Teachers develop and analyze common assessments, identify Target/SMART Goals, design grade level/individual teacher’s classroom improvement plans, and implement interventions for targeted students based on data analysis. Teachers collaborate in their grade levels and across grade levels’ to increase teachers’ awareness of all students' needs and share effective teaching strategies.

Socially, Cyril Wengert Elementary School has launched a proactive anti-bullying students' safety program entitled; “Wengert Safety Enforcement Patrol Officers’ Club” to promote safety and anti-bullying practices. The program’s objective is to model students' desirable behavior, encourage students to brainstorm peaceful resolutions, train and empower the officers to resolve conflict peacefully, and to intercept and prevent violence. The Safety Enforcement Patrol Officers’ Club had a tremendous impact on students' leadership skills and deescalated bullying and unsafe practices on campus.

Today Wengert Elementary School is recognized as the State of Nevada Reward School; “Reward schools are schools that the State commends for high levels of student growth over a number of three years. The State recognizes schools that have achieved high levels of student performance both in the aggregate and in each eligible student subgroup over a number of three years. The State ranks each school’s individual subgroup proficiency against those of other schools in the state of Nevada in which each eligible subgroup ranks in the top 10% of that subgroup’s performance across the state and the overall proficiency rate is greater than 90%.”
ECONOMIC AND SOCIAL FACTORS RELATED TO THE ON-TIME HIGH SCHOOL GRADUATION RATE IN THE UNITED STATES

topic area: Educational Foundations

Presentation Format: Paper Session

We use multiple regression analysis to identify several useful socioeconomic predictors of the on-time high school graduation rate throughout the United States. Other variables of potential interest were found to not have a strong association with the graduation rate.

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Abstract

This work examines several exogenous social and economic variables to identify those that are useful predictors of the on-time graduation rate of high school seniors. It was discovered that the minority percentage of the population in a state is strongly and negatively related to the graduation rate. The per capita state and local tax burden is positively related to the graduation rate and the unemployment rate in a state is negatively related to the graduation rate. These findings are useful when considering a general societal need to sustain a high level of on-time graduation.
ECONOMIC AND SOCIAL FACTORS RELATED TO THE ON-TIME HIGH SCHOOL GRADUATION RATE IN THE UNITED STATES

Introduction

There has always been in the United States a tenet that public education is a fundamental necessity. An educated citizenry is essential for the survival of a government, as Lincoln (1863) said, “of the people, by the people and for the people”. The entire population develops viewpoints that undergo reconciliation or dispute at a higher level when discourse is rational and deliberate. Individuals are strengthened with understanding, reasoning and marketable skills. We commit to the ideal that public education is important and required of our young people.

Where education was once the opportunity of privilege, our collective intent is to make education available to all. Our history has worked through major societal issues in bringing education to all of our youth: male and female, rich and poor, urban and rural, white and not white, able and disabled. Perhaps a principal hurdle to equal access to education has been the existence of segregated schools. Differential economic status may well also affect progress toward that goal. Moreover, cultural influences may offer encouragement in educational achievement for some students and not others.

The purpose of this study was to examine recent social and economic indicators for evidence of achieving education for all of the people in the United States. This work selected a commonly accepted social goal for having an educated population: the graduation rate for seniors in high school. Data on high school graduation rates in all fifty states in the 2009-2010 school year were collected. A multiple regression statistical model was used to relate this percentage to several economic and social factors in each of the states. The analysis permitted identifying which of these factors are significantly related to the graduation rate and which ones
are not. We as a nation will thereby be enabled to concentrate on national and regional policies related to the economy and social development with the objective of maintaining and strengthening the overall graduation rate.

**Review of Previous Related Research**

There has been academic interest in factors related to student performance. Borland, Howsen and Trawick (2005) studied the relationship between class size and student achievement. Bouck (2004) examined student achievement in comparison to school size and location of rural schools. Brewer, Ehrenberg, Gameran and Williams (2001) related class size to achievement. Jepsen and Rivkin (2009) also studied class size and teacher quality. Clark, Thompson and Vialle (2008) identified a gender gap in several outcomes of public education. Rabiner, Murray, Schmid, and Malone (2004) explored the effect of ethnicity on achievement and attention difficulties. The impact of ethnicity upon academic success is also of interest in this work. Toutkashian and Courtis (2005) developed a model of school rankings in which a set of socioeconomic variables was incorporated as predictors. The work developed here arises from this approach and incorporates some similar predictors in order to model the societally important goal of maintaining student retention.

**The Statistical Model**

This work developed a multiple regression statistical model that predicts the on-time graduation rate for high school seniors who were incoming freshmen of four years earlier. The dependent variable in this study is GRADRAT, the on-time graduation rate for senior high school senior students who were freshmen four years earlier. The prediction is based upon several independent socioeconomic variables: per capita personal income, percentage of minority population, household size, poverty rates, per capita tax burden, general level of educational
attainment, secondary school student-teacher ratio, and state unemployment rates.

The data was obtained from various sources. The data set consists of the values of independent variables in each of the fifty United States for the years 2009-2010 and the dependent variable for the 2009-2010 school year. This approach permits policy analysts to assess the relative importance of the several input variables as they seek to enhance the educational outcome measured by graduation rate. The dependent variable national GRADRAT data was found at eddataexpress.ed from the United States Department of Education (2010).

The first independent variable is PPINC, the per capita personal income by state. This is available from the U.S. Census Bureau Statistical Abstract of the United States (2012). The role of this variable is to assess the extent to which average income affects graduation rates.

Another independent variable is PCMINOR, the percentage of minority population by state, and is found in the U.S. Census Bureau Census 2000 Redistricting Report (2010). This variable blends the several ethnic groups into one. Although this is problematic, it is helpful in any individual state for the purpose of judging overall performance.

HSIZE is household size and is measured by the average number of people living in a household and is from the U.S. Census Bureau Census 2000 Summary File (2010). This variable is of interest because it might be argued that larger households are either more likely or less likely to yield higher graduation rates.

PPOV is the percentage of the population that lives below the poverty line and is from the U.S. Census Bureau American Community Survey (2012). There is legitimate concern that poverty is linked to underperformance in educational attainment, so this variable will indicate the extent of any such possible performance gap.

PCTAX is the total state and local per capita tax burden. Data for this was obtained from
the Tax Foundation web site (2011). States do have uneven overall tax levels, so the possible effect of heavier taxes upon graduation rates is worth knowing.

The general level of educational attainment in a state was measured by PGRAD, the percentage of the population aged at least 25 years who have at least a bachelor's degree. This was obtained from the U.S. Census Bureau American Community Survey (2012). There is a thought that a higher general level of education in a state will create and sustain an environment where educational attainment has high value. Therefore, this variable permits examining that strength of that influence.

The number of students in a classroom may affect the learning environment and impact the graduation rate. The possible influence was measured by SSRAT, the average student-teacher ratio in the secondary schools in the state. The data is available from NEA Research web site (2012).

Finally, the effect of the general level of unemployment in a state may have direct and indirect impacts upon graduation rates. Direct impacts include reduced tax revenues with higher unemployment. Other related influences include the possible need to drop out of school in order to find work or the difficulty of remaining in school when related expenses are too large of a burden. This variable is UNEMP, the state unemployment level and is from the United States Bureau of Labor Statistics web site (2011).

The full multiple regression model is presented in Table 1. The prediction equation is

\[
\text{GRADRAT} = 90.6191 - .00047514\text{PPINC} - .219569\text{PCMINOR} + 2.95497\text{HSIZE} - .374089\text{PPOV} + .0030335\text{PCTAX} + .304008\text{PRAD} + .0424681\text{SSRAT} - 1.25554\text{UNEMP} + e
\]
The $R^2$ value from this model is .677 and the $R^2$ adjusted for degrees of freedom is .614. Only three of the predictor variables have significant t-statistics. Specifically, PCMINOR with a t-value of -3.184, PCTAX with a t-value of 2.163 and UNEMP with a t-value of -2.972 appear to have significantly nonzero coefficients in the prediction equation. These three predictor variables also have two-tail p-statistics below .05.

The F-statistic is commonly used in multiple regression analysis to test the hypothesis that all of the variable coefficients are equal to zero. If this hypothesis is not rejected it is concluded that the model has identified independent variables that are useful in predicting variations in the value of the dependent variable. In this model the F-value is 10.7748 and yields a p-value of less than .00001. This adds further weight to the importance of PCMINOR, PCTAX and UNEMP as predictors of the value of GRADRAT in each of the states.

The $e$ term in the above equation is the individual error term for the predicted graduation rate for any state. Such values can give rise to interesting comparisons of relative performance between the states as they apply these independent variables to compare graduation rates. However, such an analysis will not be carried out here because the matter of interest is to find significant common influences upon graduation rates.

The prediction model did not support a claim that the other independent variables have an important impact upon graduation rates. Per-person income is not found to have a significant effect upon graduation rates. The regression coefficient of PPINC is negative at -.00044, or nearly zero and even has a counterintuitive negative sign. The t-statistic for the hypothesis that the PPINC coefficient in the equation is zero is -1.671 and the two-sided p-statistic is .102.

Household size as measured by HSIZE did not significantly affect graduation rates. It
appears that large families and smaller families both offer their students comparable support in moving students toward graduation. The t-statistic for HSIZE is .3525 and the two-sided p-value is .726, rendering the conclusion that this variable is not a significant predictor.

The percentage of the population in poverty is not a significant predictor of graduation rates. The regression coefficient of PPOV is negative at -.374. This is expected in that it might be believed that increased poverty leads to a lower motivation to complete schooling. Happily, this study does not indicate that poverty actually is an important determinant of graduation. The t-statistic for PPOV is -.9774 and the two-tail p-value is .3341.

It was not found that the overall percentage of the population with college degrees has a significant influence upon graduation rates. The variable PGRAD has a t-statistic of 1.301 and a two-sided p-value of .2004. Thus, it does not appear that any state-wide environment of higher educational attainment serves to significantly increase graduation rates.

It is perhaps surprising to observe from the results that the student-teacher ratio does not significantly affect graduation rates. This finding would be understood to be controversial and a point of continuing discourse between factions arguing points of educational quality and the cost of education. The SSTRAT variable has a coefficient of .042. This does indicate that a higher student-teacher ratio leads to higher graduation rates. This is also counterintuitive, but the accompanying t-statistic is just .1048 and the two-sided p-value is .919, which admits the conclusion that student-teacher ratio variations among the states are not sufficient to bring about different graduation rates.

Attention turns to the variables that were found to significantly affect graduation rates. The first of these is PCMINOR. The percentage of minorities in the state population is shown here to affect graduation rates. The t-statistic for that variable is -3.184 with a two-sided p-value
of .002. The negative value clearly shows that a higher minority population percentage negatively impacts graduation rates. It seems impossible to overstate the importance of this finding. It is cause for remediation efforts that can include government at all levels, family and social influences and the creation of an atmosphere where educational attainment is a universally accepted goal. It is also noted here that this variable possibly understates the magnitude of the problem. The t-statistic of this variable is the highest of all the variables, indicating the level of importance of this problem. The variable measures the aggregate nonwhite population percentage as if it were one class. However, there are several nonwhite ethnic groups and it is not to be assumed that educational attainment is identical throughout. Some groups may lag others. In fact, this possibility suggests the opportunity to extend the research in that direction.

The PCTAX variable is held to be a significant predictor of GRADRAT. Per capita taxes are used to measure the tax burden because it levels the influences of taxes. This variable yields the reasonable conclusion that higher taxes do directly bring about higher graduation rates. This observation can bring reassurance that tax dollars are spent well when considering the goal of having higher graduation rates. The PCTAX regression coefficient is significantly positive, having a t-statistic of 2.163 and a two-sided p-value of .0364.

The third significant indicator of graduation rates is UNEMP, the unemployment rate in the state. The regression coefficient is -1.255. The t-statistic is -2.972 and the tow-sided p-value is .0049. The -1.255 value predicts that a 1% increase in the unemployment rate will bring about a 1.255% decrease in the high school graduation rate.

The presence of the several nonsignificant coefficients in the above model led to the creation of a reduced model including as independent variables just PCMINOR, PCTAX and UNEMP. The result is shown in table 2. This is given as
GRADRAT = 86.1683 - .218608PCMINOR + .00261825PCTAX – 1.28564UNEMP + e

For this model the $R^2$ value is nearly the same as in the full model, being .624. Moreover, the $R^2$ adjusted for degrees of freedom remains about the same, being .600. This means that the reduced model performs nearly as well as the full model when predicting the graduation rate. The F-statistic for the hypothesis that the several regression coefficients of the independent variables are all equal to zero is 10.7748 and has a p-value of less than .0001. It is thereby concluded that these independent variables do significantly predict the value of GRADRAT in the fifty states.

Upon the removal of the other predictor variables and the possible multicollinearity that they introduce, the t-statistics of these remaining predictors are even higher. For PCMINOR the t-statistic has risen to -5.186 with a two-tail p-value of .0000. PCMINOR continues to have the largest t-statistic and thus retains its position of being of the greatest concern.

PCTAX in the reduced model has a t-statistic of 4.200 and a two-sided p-value of .0001. Also, UNEMP has a t-value of -4.069 and a two-sided p-value of .0001. It is thereby observed that the reduced model has identified the three most important variables affecting graduation rates. Educational planners can use this knowledge to focus on the most important issues in student retention and graduation. Two of these, PCTAX and UNEMP, are economic in nature and the third, PCMINOR, is social. Of course, as we view society in the United States it will be quickly observed that these influences are not totally separable. They have linkages that should not be ignored. In fact, these linkages can be recognized as aspects of a societal plan that has the goal of bringing about higher graduation rates throughout the country.
Conclusion

This work has developed a multiple regression model for the prediction of high school graduation rates throughout the United States. Several independent variables involving social and economic factors were included. The data arose from the year 2010 and the 2009-2010 school year. Three predictor variables emerged as significant predictors of the graduation rate: the percentage of minorities in the population, the state and local per capita tax level in the state and the unemployment rate in the state.

The results highlight some factors that go to the heart of issues that are faced by all of our society. There is an apparent racial divide in which minorities have substantially lower graduation rates. The solution to this imbalance is not likely to be easily found because there are societal issues on all sides of the racial divide. Further, it is noteworthy that the tax burden across the population does in fact affect graduation rates in a positive way. That is, a higher tax burden does correlate with higher graduation rates. This observation does suggest that tax expenditures are being effectively used to bring about this social good. Finally, the unemployment rate in a state will demonstrably and negatively affect high school graduation rates. Given that the nation values an enlightened populace, these three socioeconomic considerations must be included in the decision of how to effectively bring education to our young people.

Other possible influences upon the graduation rate were examined and found to not have an important association. These include the per capita personal income level, number of people in the household, the percentage of the population that is in poverty, the percentage of the population that has bachelor degrees and the student-teacher ratio in the secondary schools.

There are possible extensions to this work. Because of the importance of the PCMINOR variable in the model, it would be useful to break out this population subgroup into several
smaller subgroups, including perhaps, blacks, Hispanics and Asians. Doing so would help in targeting assistance where it might be the most beneficial.

Other studies may desire to incorporate other potential predictor variables that measure our social and economic position. Models directed toward a particular region of the country would be of interest to those who desire to deal with local challenges instead of national comparisons. Also, there are other worthy societal goals to be considered. These might include performance on standardized tests or the percentage of students who are enrolled in advanced placement classes.
Table 1. The Full Multiple Regression Model

<table>
<thead>
<tr>
<th>Variable</th>
<th>Parameter</th>
<th>Standard Deviation</th>
<th>t-statistic</th>
<th>2-tail p-value</th>
<th>1-tail p-value</th>
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</thead>
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<td>.0009938</td>
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<td>-2.972</td>
<td>.00492858</td>
<td>.00246429</td>
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Multiple R  .823206
R-Squared    .677669
Adjusted R-Squared .614775
F-Statistic (8, 41 df) 10.7748
Residual Standard Deviation 4.20051
Table 2. The Reduced Multiple Regression Model

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Multiple R  
R-Squared  
Adjusted R-Squared  
F-Statistic (3, 46 df)  
Residual Standard Deviation  

.790517  
.624917  
.600455  
25.5465  
4.27787
References


Title of submission: Understanding International Immigration Laws and Their Effects on the School of Immigrant Children: How does the U.S. Differ for Schooling in a Global Society?

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Voices Ring True: Engaging Student Voice in Freirean Culture Circles

Curriculum, Research and Development

Poster Session

We are motivated to find ways that enable future teachers to embody Freire’s (1998) concept of “conscientização” (p. 35) or critical consciousness in the act of educating. Our approach is to explore the possibilities of transformation in education through engagement with student voice. Asserting that we cannot change education for the students without their explicit participation, we engage in an inquiry alongside students to develop a new framework for education.

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Voices Ring True: Engaging Student Voice in Freirean Culture Circles

Abstract

Standing on the shoulders of the theorists of critical pedagogy, we are challenged to engage in an exploration of how we might become more just, democratic, and equitable as educators. We are motivated to find ways that enable future teachers to embody Freire’s (2000) concept of “conscientização” (p.35) or critical consciousness in the act of educating. Our approach is to explore the possibilities of transformation in education through engagement with student voice. Giroux (2009) proposes that voice can offer “a basic organizing principle for the development of a relationship between knowledge and student experiences and, at the same time, create a forum for examining broader school and community issues.” (p. 455) Through student voice, we hope to find a pathway to greater consciousness. Insights into students’ sense of identity in secondary schools and the meanings that they create through the educational experience are essential knowledge for the critical pedagogue. We wonder how student voice can provide opportunities to empower learners and reveal hidden injustices in educational practice. We wonder if there remains a sense of hope for the future for students. Likewise we are interested in how students cope with inequality. We question how students perceive the hegemony of a social elite within their own lived experience in the classroom. Most importantly, we open ourselves to be challenged by student voice so that we might become more conscious of the work that lies ahead in creating a more democratic education. Asserting that we cannot change education for the students without their explicit participation, we wish to engage in an inquiry alongside students. From this practice, we believe that we will develop a critical sense of education.

Freire (1998) writes, “Insofar as I am a conscious presence in the world, I cannot hope to escape my ethical responsibility for my action in the world” (p. 26). As doctoral students in education, we embraced this idea of ethical responsibility as a mandate for social justice. We began to delve into literature that informed our critical reflection. In reading McLaren (2009), we discovered that “critical pedagogy is fundamentally concerned with understanding the relationship between power and knowledge” (p.72). As such, we found it necessary to deconstruct our purpose within the field. Through a discursive process of uncovering the inequity exposed within the power structures of the educational system, we recognized that our work calls for more than an understanding of such structures. We needed to take social action beyond the texts covered within our academic study.

This action began with a process of understanding our positions as engaged students. Additionally, we began to explore the role of student voice within K-12 school settings. Freire (1998), further informed us that “there is, in fact, no teaching without learning. One requires the other” (p. 30). That is, we understood that it was not enough to know our own voices and to learn about student voices. Rather, we needed to enact social action that would incorporate student voice as a means of empowering students
for participating within a democratic society. We decided to respond to Maxine Greene’s (2009) question, “how can we communicate the importance of opening spaces in the imagination where persons can reach beyond where they are”? (p.86).

In order to effectuate this goal, we needed to create a space for students to communicate. Within this space, we would cultivate, “a concrete set of learning conditions where people come together to speak, to engage in dialogue, to share their stories, and to struggle together within social relations that strengthen rather than weaken possibilities for active citizenship” (Giroux, 2009, p.456). Using Freire’s idea of ‘cultural circles’, we set about the task of listening to high school students discuss and inform us about their positionality in schooling.

Within the context of Freirian ideology, a cultural circle was utilized in order to create a space where student voice was not only heard but seen in the faces of those who were present. Twenty one participants were invited and attended the discussion. Kevin Stockbridge brought with him from Boy’s Republic six male students and one other adult, a licensed therapist. Charlotte Evensen brought with her one other teacher and twelve students from her AVID class, and DREAM Club from Warren High School. Those who chose to attend agreed to be available during the time allotted by the activity, and submitted the necessary documentation to their respective institutions to be given permission to come to Chapman University.

The participants were given a copy of a section from the book *Culture Speaks* (Bishop & Berryman, 2006). The reading included Maori student voices that reflected instances of both engagement and disengagement within their school environment. By giving the students the reading ahead of time, they would read what student voice looked like as well as hear what engagement and disengagement was within the Maori student experience. An overview of the proceedings was given by one of the facilitators. The students were shown the large Post-It sheets on the wall with questions noted on them. These questions were constructed from student voice regarding their experiences in education. Student participants were invited to approach all the sheets and make comments on each of them.

In the tradition of the Maori *Mihi*, the participants were also asked to come prepared with a two minute introduction of who they were, who their people are, and who they brought with them (in the figurative, spiritual sense) to this activity. Before the discussion, the participants enjoyed food. During this portion of the activity, the participants enjoyed their food as they walked to each Post-It sheet and noted their responses to the questions. The discussion was audio-recorded once the *Mihi* was finished, and it was agreed that no names or identifying information would be disclosed during the discussion in order to protect the anonymity of the participants. The discussion lasted one hour and 10 minutes. Although brief, this sessions revealed the potential of discovering untapped human resources while demystifying oppressive conditions in schools.

This presentation will directly address what has been learned from the practice of listening to student voice about justice in education. Through enacted theory, the authors bring forth possibilities for social justice education that can be applied in the
classroom. Rather than providing set of concrete guidelines, this presentation will offer a methodology of receptivity, cultural responsiveness, and social responsibility which can be applied to curricula and the generation of new knowledges within the classroom setting.

References
THE POWER OF SELF-ASSESSMENTS IN TEACHER EDUCATION PROGRAMS

A Paper Presented to the Hawaii International Conference on Education
January 5-8, 2015, Hawaii

Topic Area: Teacher Education, Paper Session

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In education today, the conversation consistently focuses on teacher assessment and evaluation. Although not widely used with pre-service teachers, self-assessments have the potential to complete the feedback loop when external evaluations are not available and have the potential to provide unique skills for self-reflection. This paper explains the use of a self-assessment resource called the Person-Centered Learning Assessment with student teachers in an urban university in the United States.
Abstract

Student teaching serves as a vital time for teacher development. It is during this time that novice teachers learn the skills that they will take with them into their first teaching job. Therefore, the processes that occur within teacher education programs are important. Frequently, evaluations of pre-service teachers include external and appraisal-based evaluations by cooperating teachers and university supervisors. Although these types of evaluations provide a unique perspective on a student teacher’s performance, it is difficult to capture all aspects of teaching within a 45-minute evaluation. Self-assessments provide student teachers with an additional type of feedback and have the potential to be a resource for self-reflection (Dewey, 1910; Freiberg & Driscoll, 2005; Goh & Matthews, 2013, Houston & Warner, 2000).

Research Objectives

The purpose of this study was to provide data regarding the use of a self-assessment instrument with pre-service teachers at a four-year urban university in the United States. This self-assessment instrument, called the Person-Centered Learning Assessment (PCLA), designed by Freiberg (2001-2013), was used with pre-service teachers as an instrument for each student teacher to self-assess teaching and learning in their classroom. The research was used to explore the PCLA instrument in classrooms with student teachers while exploring the following research questions:

1) Does using the PCLA modify the student teacher’s self-assessment from the first to the second lesson?

2) Why do pre-service teachers choose their particular indicators as part of the PCLA instrument?
3) Does student feedback of the student teacher’s lessons on the PCLA change from lesson one to lesson two?

Methodology

Carpsecken’s (1996) system of Critical Ethnography served as the basis for the research methodology. An understanding of the research context, as seen in Figure 1, is helpful in understanding the research process.

**Figure 1. The Research Context.**

Data analysis was ongoing and continuous throughout the research while following the first three stages of Carpsecken’s (1996) model of critical methodology:

1. Compiling the primary data through monological data
2. Preliminary reconstructive analysis
3. Dialogoical data generation

Reconstructive analysis, explained in Figure 2, was constantly used to analyze each data source through coding and theme creation.

| Location      | Districts around Houston, Texas  
|               | Secondary schools (5 middle schools/5 high schools) |
| Time          | February 2014 – May 2014         |
| Participants  | 10 Student Teachers            
|               | Math, Social Studies, English   
|               | 3 Male / 7 Female              |
Figure 2. Reconstructive Analysis.

Figure 3 provides an overview of the data analysis process used in this study, followed by a description of each data source.

Figure 3. The Data Analysis Process.

All data sources were based on each student teacher’s self-assessment instrument, the PCLA. The PCLA’s unique characteristic is the ability for the creation of an individual and personalized self-assessment. Each student teacher selected 8-10
Descriptors from an existing list of 37 Descriptors within four categories: 1) educator 2) learner 3) resources, and 4) curriculum. After each Descriptor was selected, the student teacher wrote Observable Indicators to help qualify what the descriptor would actually look like in their classroom. Once the PCLA was completed, the student teachers taught and audio recorded a lesson and distributed the PCLA to their students. The PCLA was used with two different lessons referred to as PCLA I and PCLA II.

As a result of both uses of the PCLA, 4 data sources were collected and analyzed:

1) Reflection I – student teacher written reflection based on PCLA I.
2) Interview I – based on reflection I data.
3) Reflection II – student teacher written reflection based on PCLA II.
4) Interview II - based on reflection I, reflection II, and interview I data.

After reviewing the audio recording, the student teacher analyzed the student feedback and reflected on the results in a written reflection to the researcher. The researcher analyzed the written reflection and conducted the first round of interviews. After interview analysis, the entire process was repeated.

Outcomes

The PCLA was used with 10 student teachers using qualitative methodologies. In this exploratory study, each of the 10 student teachers described ways in which they reflected on their teaching as a result of the PCLA, with eight student teachers specifically implementing changes from the first lesson to the second lesson.

Using a self-assessment resource in teacher education has the potential to be a powerful resource for student teachers by providing additional sources of feedback, giving student teachers opportunities for ownership over their teaching, and providing
opportunities for self-reflection. The PCLA has the potential to influence practices in current teacher education programs.
References


Title: Penn State Life: Using Authentic Immersion Technology to Promote Second Language Acquisition and Culture Sharing

Topic area: Educational Technology

Presentation format: Paper session

Synopsis: This paper proposes a conceptual framework to apply immersive technology, panoramic video, and MOOC to build an immersive MOOC course, Penn State Life, which aims to promote second language acquisition and culture sharing in a more authentic and accessible way.

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Penn State Life: Using Authentic Immersion Technology to Promote Second Language Acquisition and Culture Sharing

The importance that learning is situated in real-world settings has been emphasized by many studies in the learning sciences (e.g., Bruckman, 2006; Collins, 2006; Gee, 2004; Krajcik & Blumenfeld, 2006; Lave & Wenger, 1991). A considerable amount of empirical studies also support Vygotsky’s sociocultural theory (1978) that people learn from social practice. However, decontextualized school education fails to display learners’ existing complex cognitive skills within school assignments (Nasir et al., 2006).

Situated learning provides access to authentic contexts and culture that are essential for second language acquisition. According to Krashen (1987, 1988), there are two independent systems of second language performance: ‘the acquired system’ and ‘the learned system’. The 'acquired system' is the product of a subconscious process very similar to the process children undergo when they acquire their first language. It requires meaningful interaction in the target language - natural communication - in which speakers are concentrated not in the form of their utterances, but in the communicative act. Hinkel (1999, p2.) claims, “… a second or foreign language can rarely be learned or taught without addressing the culture of the community in which it is used.” Swain (1985) argues that the failure to achieve native-like competence in grammar and other features may be due to the learners’ lack of opportunities to actually use their immersion language.

To help students acquire a second language within a targeted language immersion environment, technologies such as Oculus Rift and Sony’s Morpheus afford immense potential by enabling students to immerse in another reality. The mechanism of this type of technology is to imitate human’s visual system to create a virtual reality inside goggles that allow users to change perspectives by turning their heads. Other immersion auxiliary equipment includes Sensation’s Stem system, which can be used to locate the users’ different body parts and then reflect their poses to their avatars in the virtual environment, and Virtuix Omni, which is a treadmill-like device allowing users to walk or run by feet in the virtual world.

Although previously the reality that people can immerse into via immersion devices has been primarily virtual reality, the meaning of ‘reality’ now has been extended to include ‘real’ or ‘authentic’ reality. An example is The Machine to be Another. This research is conducted by BeAnotherLab, consisted by an interdisciplinary group of students at the University Pompeu Fabra, in Barcelona. In the study, researchers relied on an early version of Oculus Rift and a camera on the headset to allow two people to exchange their experience of vision simultaneously (The Machine To Be Another, 2014). In another study, a panoramic camera was used to record 360-degree video clips, and online users then used Oculus Rift to replay the clips (360 video in Oculus Rift, 2014). This new concept of reality reflected in immersion technology affords authentic learning context and experience for second and/or foreign language learners.

Once language-learning context could be shared via immersion technology and information communication technology, the number of potential learners who can profit from such technologies is large, considering the decreased price of immersion equipment and the dramatically increased number of e-learning students. Nowadays an Oculus Rift costs only a few hundreds dollars, which is much cheaper than before. According to China Education Statistics (2014), the number of distance education students who pursued their bachelor’s degree by E-learning in China rose
continuously from 500,727 in 2003 to more than 4.5 millions in 2010. Today, about 4.6 out of ten college students take at least one course online (Pappas, 2013). Most of these students are required to register for some foreign language courses. Another group of learners who can benefit from this is international students who need to familiarize themselves with the target language and culture before arrival.

Nonetheless, there is a clear lack of studies and learning systems designed to take advantage of authentic immersion technology in language learning. A relevant research direction is immersion education, in which students learn all subjects through the medium of target foreign language in school settings (McKendry & Mhadagáin, 2006). However, the research scope of this line of research is limited to the academic environment and does not, for example, include authentic cultural environments in foreign countries. More importantly, immersion education requires teachers with content-subject expertise and high language proficiency skills. Yet the reality is, in developing countries particularly, schools are short of teachers with such qualifications.

When examining current e-learning platforms, we found that they fail to provide authentic language-learning environments. Usually these platforms only provide students and teachers with functions mirroring the instructional materials and processes in traditional school setting, such as syllabi, assignments, decontextualized discussions, assessment instruments, and grade books. Although in some cases, video and flash animation have been introduced, they are used mostly to demonstrate learning materials or partially replace some lectures.

There are also some foreign learning systems with game features that allow students to immerse in an on-line virtual world, like Virtual China (Zhao, 2014). Several empirical studies have shown the deficiency of these virtual systems towards learning outcome and students’ engagement compared to learning in a real physical world (Andrew et al, 2007; Wainer, Feil-Seifer, Shell & Mataric, 2007; Xie, Antle, & Motamedi, 2008). Due to the lack of fidelity in the virtual reality, they fail to create authentic learning environments essential for language acquisition.

To bridge the gap between sociocultural theories in second language learning and cutting-edge immersion technologies, this study will investigate how current authentic immersion technologies can be used to create authentic language-learning context and facilitate the sharing of such contexts. To this end, we will design a prototype of Penn State Life, an immersive Massive Open Online Course (MOOC), which combines panoramic video technology, immersion technology, and MOOC (Pappano, 2012), to provide unlimited participation and open access via the web and to record and share students’ lives at Penn State University. By this way, all potential second language students with Internet access can benefit from the shared language learning opportunities provided by the immersive MOOC site; they can also interact with each other online, which is another essential factor for students’ learning from the sociocultural perspective (Greeno, 2006; Sawyer, 2006; Scardamalia & Bereiter, 2006).

More specific research questions include:

1. How do students respond to the authentic immersion-learning environment?
2. How could reality immersion learning change student conception towards the culture of the target language?
3. Does reality immersion learning lead to improved outcomes of second language learning?

Findings of the current study could also inform further exploration on this topic, e.g., in examining real-time interaction among people physically located in a situation
and students who immerse into the situation via immersion devices and its effect on second language learning.

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A. **TITLE:** Core Values Identification in School-based Cooperatives in Cavite, Philippines

B. **TOPIC AREA:** Other Areas of Education (Values Education)

C. **PRESENTATION FORMAT:** Paper Session

D. **DESCRIPTION:** This paper will highlight the core values in areas of cooperative services and behavior common to participants from ten schools. It will present an application of means-end theory to the problem of identifying the core values of school-based cooperatives in Cavite, Philippines. Through the laddering technique, the researcher was able to identify the underlying values based on the attributes and consequences of cooperative services, behavior of members and stakeholders.

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ABSTRACT

The International Cooperative Alliance (ICA) prescribes the universal values of cooperative movement. While they are relatively important, a search for common core values of school-based cooperatives in Cavite is worthwhile. This research applied means-end theory to the problem of identifying the core values of school-based cooperatives in Cavite. Through survey questionnaire and group discussions conducted to participants from ten schools, the researcher utilized the laddering technique (Reynolds, T.J., Phillips, J.M., 2008) not only to identify the attributes and consequences of cooperative services and behavior of members and stakeholders, but also to probe deeper the underlying values that made the factors important. The values cited by participants in cooperative services were honesty, transparency, discipline, accountability and responsibility; while in the aspect of members’ behavior the identified values were honesty, commitment, love for God, professionalism and being reasonable. This study highlighted the core values in areas of cooperative services and behavior common to all participants. Analysis of the Hierarchical Value Map on both cooperative services and behavior revealed that the core values of school-based cooperatives in Cavite were honesty, commitment, concern for others and low interest rate as value in the service development.

INTRODUCTION

Core values are important. They guide everyone in making the right decision in the face of differing views. When core values are clear, decisions that are subjective and based on feelings are avoided. It is true especially in times when dire and difficult decisions have to be made. But core values are not only important in decision making process. They are also components of a structure that governs the behavior of the association. Core values strongly bind members on how stakeholders communicate with each other. In association of persons like cooperatives, who voluntarily join together to achieve their social, economic and cultural needs, and aspirations, core values are essential factors in their decision making process.

Some guidelines are already in place, both international and local, in order to achieve these aspirations, missions and goals. Internationally, the International Cooperative Alliance (ICA) prescribes universal values for cooperative movement and revises set of principles intended to guide cooperative organizations. However, a search for contextualized core values is worthwhile. The core values define the nature and quality of relationships among cooperative members vis-à-vis stakeholders. Core values serve as foundation upon which the fulfillment of vision, mission and goals relies. As mentioned in Garcia and Guanzon (2004), without this foundation on which its purpose and direction of operation are based, cooperatives would be severely affected not only in their business but also in the system that governs the behavior of the association.

Locally, the new law on cooperative movements Republic Act 9520, otherwise known as Philippine Cooperative Code of 2008, outlines in greater detail the requirements in professionalizing the management and operation of cooperatives. Its provisions provide tools for monitoring and evaluating cooperatives in conducting self-assessment of their managerial, financial and social objectives. Under the new law,
Cooperatives are expected to play important roles in the country's social justice and sustainable economic development programs. Its declared purpose, among others, is to foster the creation and growth of cooperatives as practical vehicles for promoting self-reliance by motivating members of cooperatives to develop their entrepreneurial capacities while bestowing upon their opportunities for worthwhile economic endeavors and harnessing people power towards the attainment of economic development and social justice. It can be surmised therefrom that it is the intention of the framers of the law to highlight the basic features and principles governing cooperatives.

One of its features in professionalizing the management and operation of cooperatives is defining the core values. The law considers core values as the basic elements on how management staff and leaders go about work. It is about the practices that leaders should use to transform values into actions, visions into realities, obstacles into innovations, separateness into solidarity, and risks into rewards. It is about a climate in which people turn challenging opportunities into remarkable successes.

In line with this, the researcher thought of identifying and defining the core values of school-based cooperatives in Cavite. The core values represent basic, underlying beliefs and behaviors of the members and leaders who are responsible for the creation of a high performing association.

In addition, this study examined if value structures are similar across diverse school-based cooperatives. This would suggest that there is a universal organization of human motivations among similarly employed individuals despite different value "priorities" or "hierarchies."

**RESEARCH GOAL**

The present study sought to identify the core values by applying means-end theory in determining attributes, consequences and values that underpin school-based cooperatives in Cavite.

Developed by Gutman (1982), means-end theory allows researcher to explore respondents’ choice beyond the superficial level to understand the emotional underpinnings that drive their decisions. In this theory, respondents base their decisions on factors that will lead to desired consequences. The privileging of one consequence over another reflects the value set of the persons empowered with the choice, and they will make selections that reinforce what they have deemed valuable (Klenosky, Templin, & Troutman, 2001).

**METHODS**

This study focused primarily in identifying the core values of school-based cooperatives in Cavite. To date, there are 10 registered cooperatives, namely: Cavite College of Arts & Trade MPC (CvSU Rosario), Technological University of the Philippines at Cavite MPC, De La Salle University-Dasmariñas Development Cooperative, Del Pilar Academy Credit Cooperative, Imus Institute MPC, Imus National High School Credit Cooperative, Cavite State University Development Cooperative, Cavite College of Fisheries MPC (CvSU Naic), Silang District II Teachers & Employees MPC, and Tagaytay City National High School Teachers & Parents MPC.
This identification was developed through a triangulation of qualitative and quantitative research methods and studies. It applied means-end theory to the problem of identifying the core values of school based cooperatives in Cavite. Through survey questionnaire and group discussions conducted to participants from ten schools, the researcher utilized the laddering technique (Reynolds, T.J., Phillips, J.M., 2008) not only to identify the attributes and consequences of cooperative services and behaviors of members and stakeholders, but also to probe deeper the underlying values that made the factors important.

In this study, the data analysis consisted of three phases: content analysis of the survey and group discussions interviews and codification of identified elements; quantification of existing relationships between elements and construction of a hierarchical value map; and determination of dominant perceptual orientations (Copetti, 2005; Kaminski & Prado, 2005; Leão & Mello, 2003; Lin, 2002).

RESULTS

Phase I: Content Analysis

The core values of all school based cooperatives in Cavite comprise of valuing process with respect to cooperative services and with respect to cooperative members'/stakeholders’ behavior.

1. Valuing process with respect to cooperative services

Combining the score on the services offered by all school based cooperatives in Cavite, the most preferred services are regular loan with a total score of (1,326), emergency loan (833), education loan (498), petty cash loan (288) and canteen services (238).

The overall score of respondents in reasons for patronizing the services of cooperative shows that respondents prefer offering a low interest rate as the top reason with a total score of 1,076, helpfulness (875), necessity (560), beneficiality (461) and practicality (274).

2. Valuing process with respect to cooperative members’/stakeholders’ behavior

The overall score of respondents as to proper behavior of members/stakeholders whenever they patronize the services offered by the cooperative shows that member/stakeholder who is honest is the first with a total score of 1,037, transparent (620), responsible (558), disciplined (550) and accountable (262).

With respect to identifying factors affecting product or service development, it can be gleaned from the result of the group discussion that concern for others is the first among the factors with a total score of 637, customer delight (576), service (475), profitability (416) and commitment (322).

Other factors affecting behavior of members include: Characteristics or qualities of a good leader (board of directors and officers): Commitment (1063), Competent (425), God-loving (388), Honest (364) and Disciplined (318); Management’s/staff’s/employees’ relationship with their members/stakeholders: Honest (912), Transparent (789), Responsible (645), Professional (401) and Respectful (359); Members’/stakeholders’ relationship with their co-members, management staff, board of directors, and officers: Honest (875), Responsible (591), Transparent (574), Disciplined
(417) and Professional (400); Set of values in order to achieve the vision and mission: Commitment (1104), Love for God (361), Discipline (323), Integrity (279) and Leadership (273); Reasons of staying in the cooperative: Low interest (890), Dividends (486), Quality services (333), Patronage refund (317) and Vision, mission and plans (311).

**Phase II: Hierarchical Value Map (HVM)**

The Hierarchical Value Map illustrates all the major means-end and attribute-consequence-value of all school-based cooperatives in Cavite. This section presents the analysis on: (1) the consolidated attributes of each school-based cooperative, (2) its functional and psychosocial consequences, and (3) common core values.

In applying the means-end theory analysis to determine attributes-consequences-values (ACV) in services offered by school-based cooperatives in Cavite, the analysis included answering the question: “Why is (attribute) important to you?” This elicited a response suggesting how this attribute would benefit the participant (consequence). Then the “Why is that important to you?” question was used to move the participant into deeper reflection, moving from the consequence to a personal value.

The same was applied in analyzing the valuing process with respect to the behavior regarding governance, relationship and motivation.

The HVM of cooperative services has the following chain of direct relation: Honesty: necessity-business partner; helpfulness-business partner; concern for others-facilitates saving-improvement of economic life; practicality-being well informed; Transparency: necessity-business partner; low interest rate-capable of payment-common good; commitment-fulfillment of obligations; helpfulness-fulfillment of obligations; low interest rate-capable of payment; practicality-being well informed; practicality-being convenient-social stigma; Disciplined: helpfulness-fulfillment of obligations-improvement of economic life; necessity-business partner-common good; Accountability: necessity-business partner-common good; commitment-contributing to employment; low interest rate-more accessible; and Responsibility: necessity-business partner-common good; beneficiality-contributing to employment; practicality-more accessible-being well informed.

The HVM of cooperative behavior has the following chain of direct relation: Honesty: low interest rate-capable of payment-being well informed; quality of service-being convenient-being well informed; Commitment: low interest rate-business partner-having common good in mind; quality service-more accessible-interact with others-not being excluded-professional; God-loving: low interest rate-saving money-contributing to employment; patronage refund-increase income-having common good in mind; vision mission plan-performing activities-having common in mind; low interest rate-business partner-having common good in mind; Professional: quality service-more accessible-interact with others-not being excluded; low interest rate-capable of payment-not being excluded; and Reasonable: low interest rate-capable of payment-being well informed; low interest rate-saving money-contributing to employment.

The HVM of cooperative core values has the following chain of direct relation: Honesty as core value is directly related with transparency, professionalism, and God loving;
Commitment is directly related with discipline, professionalism and honesty; Concern for others is directly related with transparency, God loving and commitment; and Low interest rate as value in service development is directly related with honesty, transparency, reasonableness, accountability, God loving and commitment.

**Phase III: Determining Dominant Perceptual Orientations**

In determining which of these chains were dominant, the HVM considered the relations from its base (A) to its top (V) to comprehend which contributed most to the results and to the total number of existing direct and indirect relations in each chain.

The dominant values are the so-called core values of school-based cooperatives in the areas of services, behavior of officers, members, staff and stakeholders, qualities of product, characteristics of leaders, and values of staying/stability.

<table>
<thead>
<tr>
<th>Values</th>
<th>Functional consequences</th>
<th>Psycho-social consequences</th>
<th>Total score</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Honesty</td>
<td>• Being convenient&lt;br&gt;• Fulfillment of obligations&lt;br&gt;• More accessible</td>
<td>• Improvement of economic life&lt;br&gt;• Being well informed</td>
<td>2824</td>
<td>37.19</td>
</tr>
<tr>
<td>2. Commitment</td>
<td>Fulfillment of obligations</td>
<td>• Being well informed&lt;br&gt;• Improvement of economic life</td>
<td>2167</td>
<td>28.54</td>
</tr>
<tr>
<td>3. Low interest rate</td>
<td>More clients&lt;br&gt;Capable of payment</td>
<td>Common good</td>
<td>1966</td>
<td>25.89</td>
</tr>
<tr>
<td>4. Concern for others</td>
<td>Facilitates saving</td>
<td>Common good</td>
<td>637</td>
<td>8.83</td>
</tr>
</tbody>
</table>

Table 1: Dominant Perceptual Orientations

Table 1 shows that among the respondents, for the dominant values with respect to cooperative services and cooperative members/stakeholders’ behavior, honesty has 37.19%, commitment (28.54%), low interest rate as value for service development (25.89%) and concern for others (8.83%).

**Implications**

1. Honesty

This value has the quality of both end and means. Honesty is a good in itself and is a means to other goods. Honesty is an important prerequisite to continuing good relations among persons and within collectives such as cooperatives. Honesty is both a quality of and a means to human fulfillment. Truth is a critically important component of rewarding community and collective life. Honesty is the *sine qua non* for an individual and collective of individuals experiencing and benefiting from the truth.
In cooperative movement, the value of honesty means simply stating facts and views as best one believes them to be. It includes honesty to others and to oneself. A person will be honest if he thinks about well being of others as important as his own. A person who is truly honest believes others; he perceives all others to be possessing similar traits. He does not doubt others and tries to deal with them with good feelings. This often gives positive vibes to the other person. It enables them to modify their behavior and attitudes so as to be in similar wavelength with honest person. An honest person remains in constant self introspection and influences others through high integrity, patience, hardwork and straightforward approach.

2. Commitment

Commitment is a fundamental cornerstone underpinning our everyday activities. We recognize the value of commitment to our management staff, co-members, leaders and to our stakeholders. Forging long-term relationships with our stakeholders, we appreciate them as the lifeblood of our cooperative. In cooperative, commitment helps us do things one would not otherwise dream of doing. Commitment requires that we give priority to a lot of things other than ourselves. It does not require that we lose ourselves entirely, only that we temper our more selfish and petty urges and challenge us to rise above them. Commitment has the power to help us grow and to be a better person, thinking always what is best for others.

This value is most relevant to public image, which the cooperative enjoys/suffers in the community that it serves. Social commitment encourages cooperative accept the responsibility to work towards the betterment of society and towards the amelioration of oppressive conditions in the society. The need to intensify that the social commitment of the cooperative is absorbed by this value.

3. Low interest rate as value for service development

Cooperatives are organized to serve their members by providing them the goods and services they need at cost. Members contribute to the capital of the cooperative in the sense that they do not invest their money in a capitalist enterprise in which the primary objective is to get the maximum profit from their investment. Members join cooperatives because they need their services. Cooperatives, however, in serving the members, do not act as charitable organizations. The members are aware that the benefits they derive from their association come from their contributions and are the result of their mutual desire to help one another. Cooperatives are not for profit, not for charity but for service. By offering a reasonable interest rate to members, we show them fairness. Being fair is really the basis for all valid and lasting codes of conduct, regulation and law. It is a matter of balancing the use of power.

4. Caring for others

Cooperatives are guided by a set of seven principles that influence their business decisions and ensure that cooperatives act in the best interest of their members. Among those principles is one known as “concern for community,” which states that while focusing on member needs, cooperatives must work for the sustainable development of the community. Beyond that goal, a cooperative should be a responsible member of the community and do all it can to meet the needs of those who live in its service area.

Caring for others is and continues to be the prime mover in the establishment of successful cooperatives the world over. This value refers to the obligation that each
individual cooperator, each cooperative and the cooperative movement as a whole must act in such a way as not to cause harm or difficulty for others either of today, tomorrow or of the distant future. Additionally, this value imposes the obligation and requirement on every element of the cooperative movement to be pro-active in leadership towards rectifying the structural and social causes of oppression and indignity. This value flows out of the ancient, but nonetheless relevant, dictum: *Do unto others what you would have them do unto you.*

CONCLUSIONS

The cognitive map of respondent cooperatives regarding the core values with respect to services and members’ behavior point to many directions. This is evidenced by the large number of elements, as well as by the complexity of the respondents’ understanding of the relationships between attributes and benefits that can be extracted from it to values, generating extensive means-end chains.

Honesty is the most important value. Thirty percent of the total respondents considered it having a greater quantity of perception orientations. It implies that this value takes the primary concern of cooperative members with regard to offering services and pattern of behavior.

Honesty and commitment have similarity. Both have similar functional and psycho-social consequences or benefits, such as being well informed and improvement of economic life.

Low interest rate takes the lead value in the service development. It is understandable to note that cooperative is organized to help borrowers enjoy a minimal interest rate. This affirms the fact that cooperative is neither a charitable nor a profit oriented institution but for service. Offering a low interest rate is an expression of service.

Concern for others compels cooperatives to work for the sustainable development of the community. This is a social responsibility of cooperatives to take pro-active leadership towards rectifying any structural and social issues affecting integral human development.

ACKNOWLEDGMENT

The author wishes to express his heartfelt gratitude to the De La Salle University-Dasmariñas through the University Research Office for the funding of this research; officers of the ten school-based cooperatives in Cavite for the permission to conduct the research; the respondents and core group members for their cooperation.

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Gamification in the Adult Academic Learning Environment

Poster Session

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Proposed Presentation Format:

Poster Session

Outline:

- History of Gamification and application in Higher Education
- Gamification and Various Learning Theories
- Game-play Integration in Staff Development Courses at University of Washington
- Provide samples of currently used gamification formats and application at
- Highlight Best Practices & Success
The term “gamification” has recently become an informal umbrella for the use of video game elements in non-gaming systems and applications - with the intent of improving user engagement. For educators, the objective is to improve engagement, but more so, to increase retention and mastery of content, encourage creative risk-taking, and to stimulate greater strategic reasoning.

Recent brain-based research suggests a similarity between effective methods of activating fundamental motivation triggers in games, and the principles of adult learning. Therefore, our first step in game formatting was to construct correlations between Knowles’s Andragogy, Blooms Domains of Learning, and theories of intrinsic and extrinsic motivation, to elements of gamification. More specifically, we identified specific learning objectives within a determined course that would lend itself to gamification, and associated it with learning theories that would support the alternative structure.

Gamification is more widely used in technological applications, yet in our environment, we chose a more assessable and economical medium: the board game. We’ve integrated this construct into our existing course instruction also because it provides hands-on cognitive development and a non-threatening, playful, yet competitive environment. The game elements, discussions, and problem solving with fellow team members serve as vehicles for learning, and by incorporating questions, problems to solve, and situations to consider, learners are challenged to think through to application.

In a report on gamification in the K-12 experience,* Columbia University’s Assistant Professor of Technology & Education, Joey Lee PhD., stated “Bringing education and game elements together could turn out like peanut butter meeting chocolate: two great tastes working together, leading to results that are especially important for developing 21st century skills. Gamification can motivate students to engage in the classroom, give teachers better tools to guide and reward students, and get students to bring their full selves to the pursuit of learning. It can show them the ways that education can be a joyful experience, and the blurring of boundaries between informal and formal learning can inspire students to learn in life-wide, lifelong, and life-deep ways.”

In higher ed. institutions, very little research and experimentation with non-technical gamification has been documented. Our ongoing integration has been to determine if gamification can make significant improvements in the adult learners’ engagement, retention, and overall quality of learning, as it has with children and younger students, or whether it is just an en vogue notion with no practical relevance in the university environment long-term.

The poster session is designed to highlight game theory and its impacts on adult learning when integrated into staff development courses. The poster will reveal current approaches and sample formats used at the University of Washington. The poster session will also allow practitioners the opportunity to question the notion of gaming impacting engagement, retention and experience. In our experience gaming and play in Staff development course has enhanced both the teaching and learning experience. Instructors are able to be flexible with content while including diverse learning styles and the learners are challenged to think strategically and creatively through to the application of new knowledge and skills, and since the games are relatively easy to play, the application of learning and mastery of content is made accessible to all learners allowing risk-taking in a low pressure/low stakes environment sprinkled with the fun-factor.

Mythic Archaeologies and Native American Artists: Visualizing Our Identity

Through Visual Mind Mapping

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According to post-structural theory, self as a singular identity is fictional. In today’s complex world self includes multiple aspects that we create and recreate self as we move through multiple contextual realms (Hall, 1994). For example, Lacan (as cited in Huang, 2003) claimed there is no absolute truth as cultural and historical meanings bring conflicting interpretations to our personal discourse. Post-modern theory acknowledges the need for multiple interpretations of a text, artifact, or other visual images. Using a post-modern lens this paper presents an artistic exploration of identity construction through visual mind mapping. Additionally, I present examples within a unit plan that incorporates contemporary Native American and other minority artists for the secondary art education classroom. These contemporary artists provide us a means for creative exploration of multiple identities similar to today’s student.

Theory of Identity Construction

Much like a painter’s brush, our identities can reveal or conceal things about us. While identity can define us as specific individuals (Agnes, 2001); Lacan argues that one can only know Self in relationship to the Other and experiences (Huang, 2003). Bernstein (1998) defines self as the images, impressions, sensory perceptions, and memories that one experiences through life. Hall (1994) draws connections between self and the Other, stating that identity includes “a kind of unsettled space, or an unresolved question in that space, between a number of intersecting discourses” (p. 9).

This idea of intersecting discourses includes self and society. According to Lacan, self and society are not separate. It is through language, a social construct, that we understand self. If one identifies self as woman, then one excludes man. Furthermore, our construct of woman and
man is socially and culturally dictated. If one identifies as woman it is in relationship to another woman or another’s definition of woman (Huang, 2003). The society that we live in dictates how we see woman and man; including, how a woman or man should behave and look. However, today’s diverse and dynamic world has brought more options for us to choose from. Previous social and cultural norms of physical appearance and behaviors are now challenged and crossed. For example, it is increasingly acceptable for men to wear make-up and women to wear suits.

Recently, Jones and McEwen (2000) conceptualized a framework for identity that frames one’s life social and cultural contexts and experiences as guiding factors of one’s multiple dimensions of self. Similar to Lacan, they suggested that we cannot separate the various dimensions or realms that self moves through, that each contributes to and changes the other. In their study of college women, they concluded that these women’s understandings of self depended upon the relationship of one identity dimension to another (Jones & McEwen, 2000). For example, some of the women discussed their identity roles in terms of being a Black woman or a Jewish woman, but not as woman, Black, or Jewish, independently. Jones and McEwen (2000) asserted that it is imperative that educators understand this shaping and reshaping of self.

Bringing Theory into Practice

Within a post-structural conception of identity diverse factors conflict and contribute to identity formation. For example, post-modern issues of power and oppression, construction of knowledge, cultural fragmentation, and representation versus reality (Efland, Freedman, & Stuhr, 1996) are issues that cultural based artists, such as Native American artists James Luna and Erica Lord, and Mexican artist Frida Kahlo encountered (Herrera, 1991). In the case of Frida, she combined, exchanged identities, or “tried on identities” (Udall, 2003, p.10). She is a part of the post-modern discourse that engages us in the deeper questions of the “why” and the “how” of
social structures as they contribute to negotiations of self and place. As we come to understand
this interchange, we acknowledge that the reflection we mirror for Self and the Other is open to
diverse interpretations. Frida’s world included Catholic ideologies, Communist propaganda, and
Mexican Nationalism. In addition, individuals (such as her father, sister, Diego, and various
artists and political figures) also were a part of construction Frida. The result was a multiple
sense of identity.

Thus, what does this mean for our students? Today’s youth already construct and
reconstruct self on a daily basis as they negotiate relationships within school, home, and cyber
space communities. Darts (2006) posits that the role of the educator is to:

help students make sense of their experiences and themselves, to facilitate critical inquiry
and create problem solving, and to support the creation of meaningful interactions and
interconnections between and within the world(s) around them.

(p. 11)

Thus, the goal of this unit is to assist students with awareness and critic of self and Other
(Knight, 2006), in order to be more assistive to students through a similar process of creative
production and critical discourse of their own multiple identities and the contexts they move
through.

Identity as a Big Idea Unit

Within my preservice art education methods course I lead students through a unit focused
on the Big Idea of Identity and we explore how this can transfer to the secondary classroom
(Anderson & Milbrandt, 2002; Buffington, 2007). To begin the unit we create a mind map where
self is placed within the core and surrounded by five to six social and cultural realms.
Additionally, they add five or six identity roles to their map. Furthermore, they add additional
words and images that link these concepts. For example, students may note how their religion, nationality, or culture informs self as a woman or as a student.

After completing this process, students chose particular aspects of their mind map to create artworks and critically reflect on their own identities. Assignments included a story pictographic map that described personal journeys. An additional lesson included creating a sculptural form informed by the identity mind-map. The mind-map explores how personal events impacted their life in some way. With this in mind, students looked to personal relationships and identity realms, noting how specific individuals informed an identity. For example, they created a mixed-media drawing that looked at their mother/daughter relationship and how what they learned from their mother later informed their own understanding of self as mother. An additional assignment included a childhood reflection. Students reflected on a difficult childhood experience and created a drawing that depicted a defining moment in their identity construction. They visualized a particular event, including the person that contributed to this defining moment or assisted them in overcoming a particular conflict in their youth.

Finally, student reflected back on their identity map to create a paper-mache mask that presented the concept of the connected and disconnect self; such as the personal and social self from the point of view of the personally desired vs. the socially constructed dimension of self. Aspects of self are often masked not only from Others, but also from ourselves. They focused on one dimension of their identity, such as mother, woman, teacher, and visualized the public self on the outside of the mask and the hidden self on the inside of the mask. This lesson challenged students’ comfort zones and brought opportunities for critical analysis of how the masked self can be used for self-empowerment. Other students chose to create a mask that used a merged concept, as they visualized intimate partnerships in a merged mask image. To conclude the unit,
students created a teacher collage that used the eye as a metaphor that visualized how this whole process assisted them in re-visualizing or re-creating themselves as teacher.

Conclusion

Our schools are a complex range of multiple dimensions, including race, gender, social, class, ethnicity, culture, and political identities; the discourse of identity is a rich topic of concern for educators. Sleeter (2001) and York (1997) acknowledge that identity exploration is a valid concept to include in the public school classroom as identity includes discourse that exposes connections and conflicts between self and other.

Many students negotiate identity roles on a daily basis. Thus, it is important for students to ask themselves essential questions, such as what are the various dimensions of my identity and how do others impact my identity? Becoming aware of these various dimensions / roles of their identity and how social and cultural environments inform these roles provides an opportunity for a creative outlet.

Efland (2002) calls attention to the importance of the cultural contexts within art education practice, knowing self starts with making contextualized connections. While our experiences are personal, they come from social and cultural discourses that operationalize meaning. Various models for a post-modern approach to art education call attention to understanding our empowered and disenfranchised identities. Most recently, our global economy and advances in technology, reflected in visual culture, affects identity construction (Banks, 2000; Freedman, 2003). Freedman (2003) states that “in the post-modern world, what students come to know and how they come to know breaks traditional boundaries” (p. 15). For example, unlike a mere decade ago, communication through technologies, such as computers and cell phones, is now the norm. It is not uncommon to see our students transverse campus or come into
the classroom with their cell phones attached to their ears. In addition, with the interjection of Internet communities into a student’s life, one can merge, double, and mask with another on MySpace, Facebook, and YouTube.

Current art education practice emphasizes the use of Big Ideas, or theme based curricula. While artists do not use the term “Big Ideas”, many artists do examine conceptual ideas, such as identity. Contemporary cultural artist, provide art educators with a rich resource for introducing a Big Idea unit on identity. By using Big Ideas the teacher philosophically engages a student in critical thinking and making meaning about the connections between art and life (Anderson & Milbrandt, 2005).

As a post-modern approach to art education the use of Big Ideas allows students to explore issues and questions about life through the connections between the artist’s perspective and the student’s experience. Through this process, student art making becomes personally meaningful as they become self-aware, critical and empowered in their understanding of their complex identities.
Example of Student Identity Map
References


Title of Submission:
WikiSpace in a Collaborative Inquiry Project

Topic Area of Submission:
Mathematics Education

Format of Presentation:
Poster Session

Description of Presentation:
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WikiSpace in a Collaborative Inquiry Project
Abstract

The uses of a wikispace in a collaborative professional development for grade 8 teachers of mathematics are described. Professional learning sessions, self-assessment surveys, individual interviews, and school visits provided glimpses of perceived benefits and challenges in the implementations and co-creations of an online resource repository. While teachers reported using the resources posted, fewer teachers contributed their own resources to the repository. The lack of time and the constant staffing changes were possible hinderances.

Keywords: elementary school, mathematics education, teacher education

Research Objectives

Collaboration in the Teaching Profession

The teaching profession has been noted for its isolated nature (Hargreaves, 1994; Lortie 1975). Such professional isolation can occur within the schools (amongst teaching peers and colleagues), and within the greater mathematics communities (amongst teachers, mathematicians, and mathematics educators) (Scholastic and the Bill & Melinda Gates Foundation, 2012). The lack of integration can be dangerous, as it may hinder “mathematics success for all students as well as teachers' continual growth” (NCTM, 2014, p. 100). On the other hand, consistent collaborative efforts amongst teachers of mathematics may result in mathematics achievement growths for students (Moller et al., 2013).

“Collaboration has become one of many essential skills necessary for effective
functioning in society” (Sulisworo, 2011, p. 58). West (1990) defined educational collaboration as “an interactive planning or problem solving process involving two or more team members” (p. 29). In such environments, respect, trust, and open communication should be constantly displayed. Some experiences common in collaborative environments include: 1) the attempts of the same tasks together, 2) the displays of mutual engagements and attempts, and 3) the co-creations of goals and conceptions (Sulisworo, 2011). The benefits of collaboration amongst teachers have been reported in numerous studies (Krajcik et al., 1994; Lieberman, 1992; Little, 2003; Moller et al., 2013). Some of the identified major benefits include: 1) the creation of communities of learning (Gable & Manning, 1997), 2) the support of teachers' learning and growth (Franke et al., 2001; Lieberman, 1992), and 3) the improvement of student achievements (Goddard, Goddard, & Tschannen-Moran, 2007; Moller et al., 2013). Within this “safe environment”, teachers may be more willing to make changes to their teaching practices (Ashton & Webb, 1986).

**The Uses of Wikispaces**

In mathematics education, collaborative approaches to professional development have been described and studied. Understanding that collaboration can occur with colleagues locally and globally, the National Council of Teachers of Mathematics (2014) suggests that “effective professional development should also focus on enhancing teachers' abilities to use technology to collaborate” (p. 85). One tool that is effective in facilitating such collaborative efforts is the wikis (Sulisworo, 2011). A free online tool, this social platform carves out a virtual space where participants can communicate, share, and work collaboratively. Wikis are fairly simple and accessible, with increasing numbers of learning communities using this forum for knowledge co-creating, sharing, and disseminating (Laugton, 2011, Liu et al., 2010; Norberg, Dziuban, &
Moskal, 2011). Within the education communities, interests in creating and maintaining web-based repositories have increased over the past years (Downes, 2007, Johnstone, 2005). Within our project, the wikispace may serve as an opportunity for our implementation teams to experience the creating and maintaining of resources virtually.

**Collaborative Teacher Inquiry Project (CTIP)**

Through the Collaborative Teacher Inquiry Project (2012-2014), effective professional development practices were explored. The main goals of the project were: 1) to examine ways of improving the teaching and learning of grade 8 mathematics, and 2) to investigate collaborative inquiry as a form of professional development. Using characteristics of successful communities of practices as the guideline, the University team, elementary school administrators, and grade 8 teachers of mathematics examined ways to improve the teaching and learning of mathematics. Such implementations included clear identifications of personal and team goals, and continuous support from the University team through workshops at the University and visits to schools. The Ten Dimensions of Mathematics Education (McDougall, 2004) served as the conceptual framework, while the professional learning sessions, self-assessment surveys, and individual interviews contributed to the planning of workshops and discussion topics.

This paper describes the uses of wikispace for the creating, sharing, and storing of resources. Specifically, we hope to address the following questions:

1. How was the wikispace used by the University team, implementation teams, and teachers of mathematics?
2. What are some of the perceived benefits and challenges in using the wikispace for collaborative professional development?

**Method**
Participants

Eight and fourteen elementary schools (eight additional and six returning) from an urban metropolitan region in Central Canada participated in the Collaborative Teacher Inquiry Project in the first year and second year of the project, respectively. This collection of schools were chosen, as they are the feeder schools to the secondary schools that our University team had partnered with in our previous project with teachers of grade 9 applied mathematics (Ferguson & McDougall, 2012). A mathematics implementation team was formed by each school, with each team consisting of grade 8 teachers, and the principal or vice-principal.

Professional Learning Sessions

Each school year, four professional learning days were scheduled at the University. Workshops were presented and demonstrated by mathematics professors, senior lecturers at the University, mathematics instructional leaders, and former math coaches. The workshops allowed teachers to explore the resources (manipulatives, rich student tasks) from the perspectives of students. A wide spectrum of mathematics education topics were explored, based on the needs and interests expressed by the teachers. The topics included: assessment, manipulatives, mathematics communication, rich student tasks, and technology.

Through these face-to-face workshops, collaborative efforts were fostered in numerous ways, and at various levels. Teachers and administrators within the same school spent much time exploring the available resources as a team, and had opportunities to communicate and refine their goals for their school's mathematics program. Implementation teams amongst schools had frequent opportunities to share instructional strategies that had worked well in their classrooms. To better understand and prepare students for the transition from grade 8 (elementary school) to grade 9 (secondary or high school), grade 9 teachers of mathematics were invited to join the
discussions. Together, the teachers examined the curriculum expectations for grade 8 and grade 9 mathematics, and identified best instructional practices for both grades. To encourage further collaboration beyond the professional learning days, a wiki website was designed to facilitate continuous sharing of teaching insights, resources, and strategies.

**Surveys and Interviews**

The Attitudes and Practices for Teaching Mathematics Survey (McDougall, 2004; Ross et al., 2003) was administered to all participating administrators and teachers during the first and last professional learning sessions of each school year. Each of the 20 Likert (agree-disagree) items on the survey aligns with one or more dimension(s) as identified in the Ten Dimensions of Mathematics Framework (McDougall, 2004). A low score on a survey item indicates the participant's attitudes and practices are less aligned with current mathematics trends, while a high score on a survey item indicates a stronger alignment (McDougall, 2004; Ross et al., 2003). After completing and self-scoring the survey, the teacher and administrator participants can reflect upon the results and identify areas for growth- both personally and as an implementation team.

Each teacher and administrator in the project was also individually interviewed by the University team. Consisting of 30 questions, the interview focused on the learning environments, visions of successes, challenging circumstances, and goals in mathematics. Through the interviews, richer descriptions of the participants' perspectives on mathematics teaching and learning may be attained. Each interview was approximately 45 minutes in length. They were audiotaped, and later transcribed by the interviewer.

**School Visits and Classroom Observations**

During each school year, the Principal Investigator and the Project Manager visited each school twice. The purposes of these visits were to further communicate with administrators and
teachers, and to observe the learning environments. These observations, along with the surveys and interviews, illustrated participants' and implementation teams' perspectives, challenges, and successes in the teaching of elementary mathematics.

Findings

Introductions and Reminders

From the beginning of the project, a wikispace was set-up to facilitate the sharing of teaching strategies and resources amongst teachers and administrators in our implementation teams. During the first professional learning session, a graduate student introduced this tool to the participants. Aware of the range of tech-savviness amongst the group, a step-by-step guide for accessing the wikispace was modeled. The wikispace link, the user name, and user password were distributed to the participants, and the organization of our virtual space was shown and explained. In subsequent professional learning sessions, teachers and implementation teams were frequently reminded of this resource. Teachers were encouraged to peruse through the collection of rich student tasks, and contribute to this collective endeavour.

Content and Organization

For efficient resource retrieval, the wikispace was organized into subsections: 1) home page with news updates, 2) Ten Dimensions framework descriptions, 3) mathematics content strands outlines, and 4) relevant mathematics resources (e.g. project presentations, print resources, online resources).

Home Page and News

Upon signing into the virtual space, participants were greeted with a simple homepage, which directed their attention to recently updated subsections. Rather than sifting through the entire virtual space, the homepage and news page directed teachers to the more pressing
information. Such may include recent changes to our wiki resources (e.g. materials and activities uploads), and time sensitive professional learning opportunities (e.g. upcoming workshops).

For example, following professional learning sessions at the University, the files and links shared were archived into their respective subsections. Reminder notes were posted on the homepage:

Please find the files and links shared during our PD sessions under 'Resources—Student Tasks and Project Presentations'.

Please find [mathematics instructional leader]'s presentation under 'Student Tasks/Data management and probability'.

Details regarding upcoming external professional development opportunities were also posted:

For those who are interested in GSP (Geometer's Sketch Pad), please find 'Sketchpad lesson link signup instructions for [provincial] teachers' under 'Print resources'.

Announcing an Adobe Connect Series on 'Supporting Students with Learning Disabilities in Mathematics'.

Literature Review and Ten Dimensions

While the theoretical framework for collaborative learning was presented on the first professional learning day, participants could gain additional insights on teacher changes, professional development opportunities, and school improvement influences through the perusal of literature summaries posted in the Literature Review subsection. The topic summaries were written concisely, but corresponding articles were cited and included for more in-depth reflections.

Similarly, while the Ten Dimensions of Mathematics Education framework was introduced and described during professional learning sessions, additional information on
literature support and implementation strategies were included for each dimension. As the professional learning sessions were planned with the dimensions and embedded subtopics in mind, participants may find greater correlations between what was experienced in the professional learning sessions and what was described in the Ten Dimensions of Mathematics Education Framework. Likewise, by posting additional readings on the Ten Dimensions, teachers and implementation teams could learn more about their self-selected dimensions of improvement (as identified through The Attitudes and Practices for Teaching Mathematics survey).

The following is an outline of the dimensions (adapted from McDougall, 2004), as presented on the wikispace:

**Dimension 1: Program Scope and Planning**
- Long Range or Yearly Plans
- Unit Plans
- Lesson or Daily Plans

**Dimension 2: Meeting Individual Needs**
- Lesson Styles
- Differentiated Instruction
- Scaffolding

**Dimension 3: Learning Environment**
- Physical Organization
- Grouping for Learning
- Teacher Feedback
- Student Input and Choice

**Dimension 4: Student Tasks**
- Rich Tasks
- Representation and Modelling

**Dimension 5: Constructing Knowledge**
- Instructional Approaches
- Questioning
- Questioning Techniques

**Dimension 6: Communicating with Parents**
- The Message
- The Medium

**Dimension 7: Manipulatives and Technology**
- Manipulatives
- Technology
- Interactive Whiteboards

**Dimension 8: Students' Mathematical Communication**
- Oral Communication
- Written Communication
- Mathematical Language

**Dimension 9: Assessment**
- Assessment Strategies
- Transparency

**Dimension 10: Teachers' Attitude and Comfort with Mathematics**
- Attitude
- Comfort with Mathematics

**Mathematics Content Strands**
Brief descriptions of the grade 8 mathematics content strands (as presented in the Ontario Mathematics Curriculum, Grades 1-8, rev. 2005) were included. While the teachers and implementation teams are familiar with the big ideas in the provincial curriculum, having this information available on the wikispace may promote a connection between these ideas, the relevant literature, and the available resources. The following are the identified mathematics content strands, and their respective areas of concentrations for grade 8 (Ontario Mathematics Curriculum, rev. 2005):

1. **Number Sense and Numeration**
   - Quantity Relationships
   - Operational Sense
   - Proportional Relationships

2. **Measurement**
   - Attributes, Units, and Measure
   - Measurement Relationship

3. **Geometry and Spatial Sense**
   - Geometric Properties
   - Geometric Relationships
   - Location and Movement

4. **Patterning and Algebra**
   - Patterns and Relationships
   - Variables, Expressions, and Equations

5. **Data Management and Probability**
   - Collection and Organization of Data
   - Data Relationships
   - Probability

**Resources**

Print resources were continuously uploaded onto the virtual space in Portable Document Format (pdfs). Based on the expressed needs and interests of the grade 8 teacher participants, the University team located and shared materials that would address their mathematics teaching goals and curiosities. Such resources included:

- Articles on the promotions of Math Talk
- Articles with tips and suggestions on assisting ELL students
- Ideas for setting up classroom Math Word Walls
- Mathematics posters
- Student tasks, organized by mathematics content strands
- Templates for lesson planning

Online resources were introduced and explored during professional learning sessions.
Teachers also suggested useful and relevant links for the inclusion into our collective database. Links to the following websites and resources were included:

- Curriculum documents (e.g. Gap Closing documents)
- Interactive online simulations (e.g. Gizmos)
- Inspiring TEDtalks
- Online games
- Resources on The Fields Institute for Research in Mathematical Sciences website
- Resources on National Council of Teachers of Mathematics website

**Implementations**

Several teachers expressed that opportunities to exchange ideas and resources amongst teachers would be valuable. They recognized the expertise that exists collectively within the profession, and knew that the sharing of these insights and resources would be highly beneficial. 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).

Within our collaborative project, the wikispace served to maintain and further develop the conversations that occurred during professional learning sessions at the University. One teacher described the benefits of the discussions and sharing:

> Getting other schools talking to each other...You always think everyone else is doing things better or they have got it easier, but when you get together with a group of other like-minded teachers, teaching the same type of things, and you get them all talking, you learn from each other and you were able to sort of assess what's going on in your school. I think that is really an authentic way of growing. So just being able to keep it up, sharing resources, and sharing ideas. The wiki is amazing because you get access to information. (T3, Beta School, Interview)

> “Yes, I've been trying to look at the wiki, trying to look online...And I've been trying to use some of the wiki resources as well...Depending on what I am doing.” (T5, Alpha School,
Interview). Teachers occasionally reported their successes with the implementations of wiki resources. A tessellation activity which integrates patterning and visual arts was introduced during a professional learning session, uploaded onto the wikispace, and implemented by several mathematics teachers. Strolls through the hallways and glances into the classrooms during school visits were greeted with displays of students' interpretations of this activity.

While some teachers utilized the resources on the wikispace in their mathematics classes, some schools also used the resources as school-wide mathematics inquiries. Tally-Ho, a pencil-and-paper puzzle numerical operations task, was introduced at one of the professional development days and archived on the wikispace. The goal of the task was to create the highest score using the given integers and numeric operations. An implementation team introduced the task to the teachers within their school, and later modified the task into a friendly competition amongst their intermediate students (grades 6 to 8). Students first attempted the task independently, after which scores and strategies were shared and discussed. The highest score from each class was selected as the representative, and between class comparisons continued. The names of students with the highest scores were announced and celebrated over the Public Address system. The implementation team reported at the following professional learning session, that, through this friendly competition, students had more mathematics discussions, more practices with numeric operations, and displayed greater enthusiasms towards the subject. The teaching team was interested in incorporating similar school-wide mathematics activities in the future, and contributing more of such activities into the wikispace repository.

**Challenges**

While teachers and implementation teams selected and implemented tasks from the wikispace, relatively fewer teachers posted and shared their own resources. During the first year
of the project, there were few discussions that occurred on the wikispace. The challenge of having more teacher participation was also experienced in our previous collaborative efforts with teachers of grade 9 applied mathematics (Egadawatte, McDougall, & Stoilescu, 2011). In that project, the teacher participants suggested the lack of time and the changes in teaching placements or responsibilities as hinderances to exploring the full potentials of the wikispace. Our current project with grade 8 teachers of mathematics also faced similar struggles, as only 10 of the original 42 teachers were still teaching grade 8 mathematics in the second year of the project. Such was due to staffing changes (teaching other grades or teaching at other schools).

**Discussion**

The creation, organization, and maintenance of the wikispace were described in detail. From interviews and observations, teachers and implementation teams agreed that the wikispace was a resource which they utilized in their mathematics programs. The implementation teams were creative in their uses of the wikispace resources, often incorporating group work, class discussions, and friendly competitions to motivate students in their mathematical thinking and practices. Unfortunately, while teachers had more opportunities perusing through the collection of resources supplied by the University team, little sharing occurred amongst teachers. Limited time and too many staffing changes were suggested as possible reasons for the lack of initiatives. White (2011) also claimed the lack of time as “one of the greatest challenges that teachers and administrators face in school” (NCTM, 2014, p. 101). Constant staffing changes made it more difficult for teachers and implementations teams to establish mutual engagement and group commitments, two elements that are important in flourishing virtual communities (Suliswori, 2011).

**Impact of the Project**
Through the Collaborative Teacher Inquiry Project, teachers and implementation teams collectively investigated techniques which promote the learning of mathematics. Having explored new resources and methods of teaching, teachers returned to classrooms more equipped to assist students in attaining successes. Partnering with teachers is essential, as “the success of any plan for improving educational outcomes depends on the teachers who carry it in classroom situations” (Misra, 2012, p. 1). In addition, the collaborative nature of the project may encourage teachers to continue learning together, and avoid the pitfalls of professional isolation. As expressed by NCTM (2014):

As professionals, mathematics teachers recognize that their own learning is never finished and continually seek to improve and enhance their mathematical knowledge for teaching, their knowledge of mathematical pedagogy, and their knowledge of students as learners of mathematics. Mathematics teachers are professionals who do not do this work in isolation. (p. 99)

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1. TITLE: How Chinese High School Students Develop Learning Strategies in Mathematics Learning

2. TOPIC AREA: Mathematics Education

3. PRESENTATION FORMAT: Paper Session

4. DESCRIPTION:

   This study examined Chinese high school students’ learning strategies in cognition, metacognition and resource management. The research instrument was adapted and modified from Pintrich’s design into mathematics learning. The statistical mean analyses showed Chinese high school students developed better in cognitive learning strategies but weaker in use resources and management strategies.

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How Chinese High School Students Develop Learning Strategies in Mathematics Learning

Abstract
This study examined Chinese students’ learning strategies when they are in high schools. The research instrument was extended and modified from Pintrich’s design into mathematics learning. More than 400 students from high schools in a metropolis city took part in the study. Statistical descriptive analysis tests the mean scores of students’ learning strategies. The result showed that Chinese students have developed better cognitive abilities than non-intelligent components such as resource management strategies. The study shows Chinese mathematics educators need to pay more attention on students’ non-intelligent strategy development.

Keywords: Learning strategy, cognitive and metacognitive development, resource management

Chinese students are outperformers in International mathematics studies. For example, students in grade eighth who participate OCED studies were in the top position of average scores (OCED, 2010, 2013). Chinese students also attained higher scores than the counterparts of Singapore, Hong Kong, Taiwan, and Korea, Japan of East Asian countries or regions. How do Chinese students learn mathematics? There are some controversial related to the high performance. Some think Chinese students rote learning and examination oriented (Leung, 2001) while some conclude the effects of competitive teachers (Leung, 2001; Ma, 1999). Some education scholars have been trying to find the reasons that lead to the high performance. However, there is not common view of how Chinese students study mathematics. This study will reveal how high school students learn mathematics. The research questions are whether Chinese high school students develop the similar abilities in cognitive, metacognitive and resource management strategies.

Literature Review

Cross-national studies, scholars tried to find the “secret” of how Chinese study mathematics. A few variables are related to Chinese students’ high achievement such as culture, language, quality of teachers, attitude of learners toward mathematics learning, parents’ involvement (Wang & Lin, 2005). In fact, in the recent decades many scholars studied what differences of Chinese and Western people have and how Chinese thinking when studying
mathematics. They found the learning gap (Stevenson & Stigler, 1992), thinking differently when learned formal algebra (Cai, 2004). Some researchers found that Chinese teachers delivered more content and experience-based (Cai & Nie, 2007; Leung, 2001). The former research examined some parts of differences such as algebra learning. Little research focuses on students’ strategies when they are in high school, and how they developed these strategies.

Learning is a process of collecting, selecting, analyzing and organizing information. The strategies of learning have been studied in the recent decades (Sawyer, 2006). Mathematics education researchers have studied strategies of learning mathematics. Well known books How to Solve It (Polya, 1945), and Mathematical Discovery (Polya, 1965) and Mathematics and plausible reasoning (Polya, 1954) are useful for some mathematics learners. However, the strategies mentioned by Polya are not related to developing non-intelligent factors in mathematics learning. How student develop these learning strategies from elementary school students to high school students seems not explicit.

Learning strategy refers to the methods or approaches to help learning achievement. Research has showed that positive self-efficacy and task value beliefs can help the self-regulated behaviour and further promote students’ cognition as well as the use of resource management strategies (Pintrich, 1999). A student’s learning strategies are directly linked to their ability to self-regulate their learning activities. Self-regulated learners are “metacognitively, motivationally, and behaviorally active in one’s own learning processes and in achieving one’s own goals” (Eccles & Wigfield, 2002, p. 124). This framework assumes that motivation and learning strategies are not static traits of the learner, but rather that “motivation is dynamic and contextually bound and that learning strategies can be learned and brought under the control of the student” (Duncan & McKeachie, 2005, p. 117). Based on these former studies, we design a research instrument entailed for Chinese high school students to learn mathematics.

**Research Method**

This study is to test how Chinese high school student develop cognitive strategies, metacognitive strategies, and resource management strategies in mathematics learning. To measure Chinese high school students’ mathematics learning strategies, this research instrument was adapted and modified from Pintrich’s the Motivated Strategies for Learning questionnaire (MSLQ), self-report instrument (Pintrich & Groot, 1990; Duncan & McKeachie, 2005). This is 53 item Likert scale instrument. In each item, the score range is from 1 to 5. We use this
modified instrument called as Mathematics Learning Strategies of High School Students to measure high school students’ mathematics learning strategies. This instrument includes cognitive strategies, metacognitive strategies, and resource management strategies.

The participants were high school students who were in a metropolis urban city schools. More than 400 students participated in survey. The data was coded by Excel and use SPSS to conduct statistical analysis. The descriptive mean analysis was employed for the study.

**Results**

The overall scores in cognitive, metacognitive and resources management strategies, and their subcategories are illustrated below. All the average scores are out of 5 scales.

1. The overall mean scores and standard deviations of high school students’ in cognitive strategies, metacognitive strategies and resources management strategies (Table 1)

   The overall situation, when students are in high schools, their cognitive score is the highest in the three categories. The average score is 2.99. The average score of metacognitive strategies is in the second. It is 2.91. The resources management is the lowest (2.77) in the three categories.

<table>
<thead>
<tr>
<th>Learning Strategy</th>
<th>Mean (out of 5)</th>
<th>SD</th>
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<tbody>
<tr>
<td>cognitive strategies</td>
<td>2.99</td>
<td>0.55</td>
</tr>
<tr>
<td>metacognitive strategies</td>
<td>2.91</td>
<td>0.45</td>
</tr>
<tr>
<td>resource management strategies</td>
<td>2.77</td>
<td>0.67</td>
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2. The Results of Cognitive Strategies

   Students’ cognitive strategies include rehearsal, elaboration, organization and feedback. The average scores and derivations are 2.95 (SD = 0.64), 3.25 (SD = 0.64), 2.76 (SD = 0.54), and 2.96 (SD = 0.86) respectively. This result showed the strategies of elaboration is the best developed (3.25 (SD=0.64). This indicates that when students learn new knowledge, they can assimilate new knowledge to prior knowledge through comparison, connections, induction, and summarization or using graphs, analogy, and memory to do meaningful learning.

   The participants’ second strengths are rehearsal and feedback strategies. The average scores are 2.95 (SD=0.64) and 2.96(SD=0.86) respectively. Rehearsal strategies refers to students use various exercises, multiple representation, the combination of numerical and graphs etc. method for memory, retention the related concepts, proposition, properties, theorems, problem solving
methods to form long-term memory. Feedback strategies refers to students represent and adjust their attitudes and self-esteem through doing tasks, and various evaluation. The two strategies are developed similarly.

Comparing to the former three strategies, students’ organization strategy are poor developed, the average score is 2.76 (SD=0.54). This indicates that after learning new knowledge, students have some deficiency to organize the content they have learned, and have some difficulty to assimilate the new into prior knowledge, and develop the knowledge network.

3. The result of metacognitive strategies

The metacognitive strategies include five categories: planning, monitoring, regulating, introspection and flexibility. The mean score of regulating is M = 3.48, and standard deviation is SD=1.01. This is the highest score in the metacognitive strategies. The result showed us that when the learning environment or status is changed, students can adjust their learning styles, methods and psychological state accordingly.

Monitoring mean score is 3.03 (SD = 0.75). This means that students are aware of their level of mathematics knowledge, status, learning ability and effectiveness of learning mathematics. This category is in the second high level out of the five categories.

The other three subcategories are similar; the average scores are around 2.82.

4. Resource management strategies

This category includes time management, learning environment management, effort and learning emotional regulation, seeking learning facilities, and using social network ability.

The result showed that students’ using social network ability is the highest, the average is 2.98, and the standard deviation is 0.33. This indicates that students often seek help from mathematics teachers, classmates, books, internet and tutorial documents.

The lowest score is the ability to use learning environment. The mean score is 2.49 and standard derivation is 0.79. This means that comparing other subcategories, students are weak in managing and keeping learning documents, the tools of mathematics learning, creating mathematical learning environment, maintaining a quiet and safe learning environment. It also indicates that students pay less attention for outside of learning.

Discussion and Conclusion
Developing students’ learning strategies is based on its education system. Their methods and behavior in mathematics learning are related to their education from kindergarten to high schools. This study provides evidence that when Chinese students are in high schools, the overall development of students’ learning strategies does not meet national expectations. Students’ cognitive strategies are the best in the three sorts of strategies because traditionally of Chinese mathematics education system emphasizes on two basics (basic knowledge and basic techniques of problem solving). This leads to students apply cognitive strategies much more frequency than metacognitive and resource management strategies. Since 2003, Chinese government called on schools paying attention to the process of learning and non-intelligent factors, the results showed us that some expectations have been attained effects. However, Chinese mathematics educators need to address more non-intelligent factors in mathematics education.

In conclusion, this preliminary analysis provided information that Chinese students have developed cognitive strategies better than other strategies. The non-intelligent strategies need more attention in mathematics education.
References:


Submitting a Proposal/Paper:

1. **Title:** A Look at Common Core in the Special Education Classroom
2. **Topic area of the submission:** Curriculum, Research and Development
3. **Presentation format:** Paper Session
4. **Presentation Description:**

   Common Core implementation is being fully implemented in many states across the United States. Administrators and teachers alike are grappling with what this means for teaching and learning in our classrooms. Our presentation will focus on special education and explore the question(s): How schools in the Nation are implementing common core for special education and how special education classroom teachers are collaborating with site administrators in regard to common core implementation in their classroom?

5. **Paper author(s):** Dina Pacis Ed.D. & Penelope Keough Psy.D.

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**Abstract:** A Look at Common Core in the Special Education Classroom

Historically, state-developed standards, assessments, and accommodations for students with disabilities have not been adequately addressed. The Common Core State Standards provides educators with an opportunity to improve access to rigorous academic content standards for students with special needs. Administrators and teachers alike are wrestling with what this means for teaching and learning in our classrooms for our students with special needs.

A literature review will be conducted to identify current implementation of common core focused on students with special needs across the nation. Our presentation will focus on special education and explore how schools in the Nation are implementing common core for special education. Additionally a look at how special education teachers are collaborating with site administrators in regard to common core implementation in their classroom will be examined. This information will be used to inform the educational community on best practices for implementing the common core in special education classrooms for students with special needs.
EXPLORING THE NEED FOR CREATIVITY

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Abstract

This research paper examines the notion of creativity in English language classrooms in Japan. A group of Japanese junior high school and senior high school English teachers (n=22) were asked to consider how creative they are in their classes. The paper explicates the teachers’ struggle to be creative. It outlines how, through a teacher-training course, the teachers were encouraged to explore the need for creativity. The teachers’ reactions to the course are also discussed.

1. Introduction

In Japan raising the notion of creativity in the classroom is quite a revolutionary idea. This paper examines the thoughts of a small group of Japanese junior high school and senior high school teachers who were asked, as part of a one-day teaching course, to explore the concept of creativity and consider how creative they are in their classes. The paper outlines the structure of the course before going on to describe the teachers’ struggle to be creative. Finally, it offers some suggestions as to how creativity can be encouraged beyond the course level.
2. Background – The need for creativity

Despite the underlying need for creativity in education, the concept has long been ignored by many officials responsible for planning education in their countries. Thankfully, educators such as Sir Ken Robinson will not be silenced and continue to champion the importance of creativity in education. Robinson (2006, 2011) holds that many school systems across the world are ‘killing creativity’. He and many others believe that creativity is a vital component to education, and one of the keys to solving problems in the future (Cropley, 2001).

Robinson’s calls for rethinking the importance of creativity in education are being answered by forward-looking countries which are trying to change the way they educate their children. Singapore is a prime example of this. Despite being considered as having one of the most effective education systems in the world, changes are taking place. Measures have been taken to introduce a more creative approach to the country’s education system and a holistic approach is seen to be the key to cultivating creativity (Lim, 2012, para. 2). According to Singapore’s new education strategy, schools will be given more freedom to incorporate creative ideas into the syllabus (Lim, 2012, para. 6).

In Japan, the rapid economic expansion of the post-war economy and more recently the downtown in its economy, have meant that seemingly abstract concepts such as ‘creativity’ have been pushed to the margins of educational planning. The introduction of the new Course of Study Guidelines in 2013 has further compounded the pressure on English teachers and all but muffled any cries for creativity in education (Cripps, 2014; Tahira, 2012).

The rapid expansion of globalization has meant that many countries are seeking to create citizens who are equipped to cope with our ever-changing world. The Japanese government’s call for internationalization is helping shape how education is perceived, in particular, the importance placed on English language education. By seeking to improve the overall standard of students’ English in Japan, the Ministry of Education, Culture, Sports, Science and Technology (MEXT) has responded to this challenge. The implementation of the 2013 new Course of Study Guidelines has
dramatically changed the pedagogical terrain for teachers at elementary schools, junior high schools, and senior high schools (Brown & Iyobe, 2014).

There is a stark contrast between education at elementary schools in Japan and education at junior high schools and senior high schools. At elementary schools children engage in many creative activities that involve task-based learning, research, group activities, and creative exploration. However, once children enter junior high school, and later senior high school, they are confronted with a very different regime. Tests, textbooks and tedium are de rigueur. For teachers, the pressure to teach to the text and help their students pass entrance exams has created a stifling environment (Cripps, 2014).

It is clear that there is a real need to improve the way English is taught in Japan and that MEXT is trying to respond to these needs. However, it has been argued that the support structure for English teachers within the public system in Japan is sadly lacking (Tahira, 2012). Logically, support should be developed in parallel with the implementation of new policies. The growth of English Medium Instruction (EMI) at Japanese universities warrants closer research into English teaching at junior high and senior high schools (Oyabu, 2011). Pre-service and in-service training and support for English teachers in Japan is arguably behind countries in Europe and its closer Asian neighbours. Many countries are investing a considerable amount of their education budget in providing support for teachers in the form of training courses – Japanese teachers deserve similar support.

3. The course and the participants

Having taught at all levels of the Japanese education system (including elementary schools, junior high schools, senior high schools and universities), the researchers feel that they are in a position to understand the needs of English teachers in Japan. For the past three years, Cripps has been in charge of teaching courses as part of the teacher license renewal course at Nanzan University. Each year teachers attending these courses have mentioned how useful they are, and how they would like to expand their pedagogical knowledge.
Nanzan University is a private Catholic university situated in Nagoya, Japan. The University has approximately 10,000 students across two campuses. The 22 students in this study (14 females and 8 males) were teachers at junior high schools and senior high schools in the ‘Tokai’ region (Aichi prefecture, Mie prefecture, Gifu prefecture and Shizuoka prefecture). They registered for a teaching license refresher course which is held at Nanzan University every year. The course is taught entirely in English and is quite demanding in terms of participation, intense discussion, presentations, and reflection.

The teaching course takes place over one day and involves six hours of intensive instruction. There are four, ninety-minute components to the course (see below):

<table>
<thead>
<tr>
<th>Unit 1</th>
<th>Introduction</th>
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<tbody>
<tr>
<td>Unit 2</td>
<td>Exploration and discussion of teaching environments</td>
</tr>
<tr>
<td>Unit 3</td>
<td>Collaborative projects</td>
</tr>
<tr>
<td>Unit 4</td>
<td>Reflection</td>
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</table>

4. Data collection

At the start of the course in Unit 1, a simple open-ended questionnaire was administered to the teachers asking such questions as “Why are you taking this course?”, “Do you think you are a creative person?” The objective of these questions was to get the teachers to explore the notion of creativity. In both Unit 2 and Unit 3 of the course the teachers’ discussions on creativity in classrooms and their presentations were videoed. In Unit 4 the teachers wrote a reflective report on creativity and their teaching. At the end of the course the teachers also completed an open-ended questionnaire designed by the researchers, and a short exit-questionnaire administered by the University. All forms of data were analyzed using a grounded theory approach
and themes naturally arose from the rich data. Below the results are discussed on a unit by unit basis.

5. Results and discussion

5.1 Unit 1 – The importance of creativity

In Unit 1 the teachers were asked to consider the importance of creativity. This involved an examination of current pedagogy and discussions on the need for a more creative learning environment in language classrooms. Teachers were asked to define ‘creativity’ in their own words and consider problems connected with being creative. Below are some examples of the teachers’ definitions of creativity:

“Creativity is like a candy box filled with curiosity, originality, and intuition.”

“Creativity is making something new for me, and I think English teachers need to be creative.”

“‘Creativity’ is the ability or mindset to create something new, original and innovative. A creative person is free from biased ideas. If you bring creativity into your English classes, the classes will be more active. It makes it easier for students to acquire the skills of English language.”

Apart from defining creativity during Unit 1, the teachers had the opportunity to discuss the necessity of creativity in their classrooms. Many teachers stated that that it was a: “good opportunity to think about what creative or creativity is”. They realized that creativity was “an important factor” in education. As one teacher explained:

“If you bring creativity into your English classes, the classes will be more active. It makes it easier for students to acquire the skills of English language.”
5.2 Unit 2 – Activities and sharing

Unit 2 proved to be the most popular of all the units, perhaps because it was a very active session. At first Cripps demonstrated some of the creative activities that he uses in his classes. Other activities were introduced which encouraged the teachers to consider how they can motivate their students to study English. Examples of such activities were drawing activities, word games, psychological tests, and games which challenge students’ communicative ability (Appendix A). Many teachers seemed to enjoy the drawing game:

“I liked drawing pictures. I feel sorry for my partner because I’m not good at communicating, but the activity itself was great. I want to try it in my class.”

One particular activity seemed to engage the teachers most. The activity involved the use of Lego bricks. The teachers worked in pairs. One person had to construct a simple model using some of the bricks and then they were asked to describe that model (in English) to their partner who was sitting opposite them. However, the partner could not see the model because a screen was placed between the two teachers. This proved to be a challenge to the teachers’ communicative ability. One teacher describes their thoughts on this activity:

“In today’s lesson, explaining something to each other was very new to me. I’ll adapt it to my lesson. I will make more speaking time in class.”

Apart from these activities being challenging and fun they also encouraged active communication. After these example activities were demonstrated the teachers had the opportunity to discuss their individual teaching environments and to share their own activities. The teachers were very positive about their sharing experience and they expressed this satisfaction in the end of course questionnaire:

“Sharing many experiences, opinions and ideas with other schools’ teachers is very useful and fun.”

“It was very helpful to know other participants and exchange information.”
5.3 Unit 3 – Collaborative projects

Unit 3 gave the teachers the chance to explore their creative horizons through a collaborative project. The teachers were randomly placed in small groups of four or five. They were told that they had to create ‘innovative and practical activities’ which could be used in a first-year English class at a Japanese senior high school. To facilitate this they were given copies of a textbook co-authored by one of the researchers (Cripps et al., 2012). The teachers were informed that they could focus on one skill such as reading, writing, listening and speaking. Alternatively, they had the option of using a combined skills approach. They had one hour to collaborate with their group members after which they would present their ideas in front of the whole class. These presentations were videoed.

The responses to Unit 3 were extremely positive. The teachers liked the fact that they could garner ideas from other practitioners. Some participants noted that they enjoyed “making something new”. One teacher summarized their thoughts:

“Making our own plan was very interesting. Sharing other ideas was very useful”

Initially, when designing the course there was a concern that the teachers may be reticent to work with strangers and to present their ideas in front of the class in English. Fortunately this proved not to be the case:

“Collaborative project was useful, because I could work together with other teachers and could come up with ideas.”

5.4 Unit 4 – Teachers’ reflections and end of course questionnaire comments

The end of course reflective report (Appendix B) afforded the teachers the opportunity to reflect on the course and what they had gleaned from it. They were encouraged to develop their own working definition of creativity and to consider how to make their classes more creative. Many teachers stated that they wanted to weave presentations into their own classes:
“Today, I found it useful to make presentations in front of other participants, so I would like to have more presentations in my class.”

The overall feeling from the participants was that the course was very successful and achieved its aim of helping the teachers to consider the necessity of creativity in English classes. The end of course questionnaire gave the teachers the opportunity to provide feedback and to suggest future topics for the course.

6. Raising awareness and providing support

Over the course of many years spent helping Japanese teachers improve their language teaching it has become evident to the researchers that teachers clearly value creativity, but somehow the daily routine of teaching to meet educational guidelines pushes creativity to the margins of their teaching. The teachers in this small-scale study stated that the course helped them reevaluate their teaching and gave them motivation to revisit the concept of creativity. One teacher expresses her feelings thus:

“I can’t produce a grand and elaborate painting or invent something to change the world, but still I want to be creative all through my life.”

The importance of courses that act to ‘refresh’ the teachers’ minds and help them to revisit certain concepts should not be underestimated. Getting teachers to see classes from their students’ perspectives for example can enhance the reflective process. One teacher in her reflective comments echoed these thoughts:

“Sometimes I need to stand at the students’ point of view and ask myself, “Isn’t this activity boring?” “What can I do to make the class more interesting and get the students involved?”

Another teacher expressed their resolve to think more about their students:

“I will do whatever I can to stimulate the students’ intellectual curiosity.”
In order to encourage teachers to strive for more creative classrooms and to support their endeavors, the researchers intend to implement the following:

1. Conduct follow up interviews with the teachers who attended this course to see to what extent (if any) the course had in encouraging them to be more creative.
2. Visit schools in the Tokai area to gauge the level of creativity in English classrooms and to encourage teachers to expand their creative boundaries.
3. As both researchers write English textbooks for the Japanese education market, they intend to weave in more creative and engaging activities into the books that they write (see Cripps et al., 2012).
4. Since Nanzan University has open campus lectures, the researchers intend to use the opportunity to give public lectures on the need for creativity. In fact, the first of these lectures was given in July, 2014 to an audience of high school students, teachers and parents.
5. When making visits to high schools as part of the university’s support programme, the researchers intend to give lectures to high school students on the need to be creative in order to cope with vocational and life changes.
6. Teach dedicated classes on creativity as part of elective TEFL courses taught at Nanzan University (Cripps 2013a, 2013b).

7. Limitations

This research study can only serve to provide a ‘window’ into one cohort’s views on creativity and, more specifically, how they feel about their level of creativity when teaching. It would be foolish to claim that the teachers’ perspectives accurately reflect those of all English teachers in Japan. Despite the methodical nature of the data collection process and analysis, a broader, in-depth, longitudinal study is needed if generalization is to be attempted.

A further limitation lies in the actual effectiveness of a one-day course. Can such a course really make an impact on the teachers’ and their teaching approach? The
following observation from one of the teacher’s end of course reflection papers reflects the reality of the situation:

“If I can make many activities which are connected to the students’ level and their necessities, the activities will be effective and my class will be more creative, but it is really, really difficult. I will try and do my best.”

8. Conclusion

Sadly in Japan, as in many other countries, the importance of creativity is often overlooked. The pressure on teachers to help students pass entrance exams for high schools and/or universities is so intense that to even broach the notion of creativity would be to risk the scorn of colleagues, parents, and students. However, it is clear that there is a real need for creative people to meet the challenges that the future holds. When faced with pressing problems such as rising unemployment, natural disasters, energy shortages, and international conflict, creative solutions are imperative.

We have to look beyond our classrooms, textbooks, exams, constraining curricula, and ask two very important questions: ‘What do we want to achieve through formal education?’ and ‘How are we going to do it?’ As educators the need to encourage creativity in our students should be paramount. Of course, realistically it is naïve to think that educational policy and its accompanying infrastructure can be changed quickly. This is where teachers play an essential role in the creative revolution. By challenging themselves through courses such as the one outlined in this paper, and instilling a sense of freedom and creativity in their classrooms, teachers can liberate their own minds and those of their students.

The need to create an environment where students can experiment, take risks, and enjoy language learning will surely nurture the latent creativity they all have. As teachers let us not be complacent and take ‘the easy way’, instead let us meet the challenge of creativity head on and help our students see many answers to the problems that they may face in the future.
References


Appendix A

Creativity and Education

1. Divergent thinking

2. Torrance Test of Creative Thinking

3. Remote Associates

<table>
<thead>
<tr>
<th>broken</th>
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4. Let’s draw

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Appendix B

End of Course Questionnaire

Thank you for participating in my course. I would welcome any feedback you could give me. Please don't write your name on this questionnaire.

1. Why did you choose this course?

2. Please give me some feedback on the following Units:
   
   Unit 1 – The need for a more creative learning environment

   Unit 2 – Sharing experiences

   Unit 3 – Collaborative project

   Unit 4 – Reflective report
3. Was there anything that you particularly liked about today’s course?

4. Please suggest some possible improvements to this course.

5. What other topics would you like to see Nanzan University offer?

6. Any other comments or suggestions?

Thank you!

Tony
ENHANCING INTERCULTURAL COMPETENCE THROUGH OVERSEAS STUDY PROGRAMS

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Abstract
This paper explicates how a Japanese university is working to enhance and expand its Overseas Study Programs (OSPs). As Twonbly et al. (2012) claim, OSPs should provide students with more opportunities to enhance their foreign language ability and intercultural competence. This is pertinent to Japan as it seeks to nurture students with these skills for active use in the ever-expanding global society. In this paper, an outline of the design, implementation, and evaluation of OSPs at Japanese universities, including Nanzan University is provided, with a particular focus on its Nanzan Asia Program (NAP). Following this, it moves on to discuss the development of other OSPs currently being created. Finally, it offers suggestions to help teachers and administrators enhance their own program development by providing examples of the areas in which Nanzan University pursues further improvements.

Keywords: Intercultural competence, overseas study programs, program development

1. Introduction: Necessity of Overseas Study Programs in Japanese Universities

In recent years, the topic of overseas study programs (OSPs) has received wide attention in Japan for a number of reasons. Firstly, as Japan endeavors to become more competitive in global society, it has intensified its efforts to provide Japanese university students with opportunities to enhance their foreign language ability and intercultural competence. As Twonbly et al. (2012) stress, OSPs play an important
role for universities by providing students with such opportunities. They also strongly suggest that the output possibilities for students are strongly influenced by the extent to which the university intervenes in terms of OSP content development. In short, the clearer the program objectives are structured, the higher the motivation and possible skill and knowledge output become for the students.

1.1. Overseas Study Programs in Japan

Nearly 30 years ago, Best (1987) drew attention to the fact that the Japanese university system had severe underlying problems. He stressed that change from within towards internationalization was very unlikely as faculty members were happy with the status quo. To address these problems, Best (op. cit.) suggested that significant change in the type of education offered by Japanese universities (such as opening themselves up to international influences) could be facilitated by pressure from the business sector (see Walker, 2005). Indeed, this appears to be happening as many Japanese companies are seeking to recruit candidates with a knowledge of English and overseas experience. This is another compelling reason for Japanese universities to expand their OSPs.

Increasingly, university students are finding it difficult to secure full-time employment after they graduate. Thus, the importance of short- and long-term study abroad programs in helping them with their future career paths cannot be overly stressed. For students the benefit of participating in OSPs is clear (Cripps, 2011a). Global competition has seen a rise in demand by Japanese companies for employees who can work in a competitive international environment. University students who choose to participate in study abroad programs have many reasons for doing so. While a small number may have lived abroad before, for the majority it is their first experience to spend a considerable period of time out of Japan. It is imperative that institutions design and evaluate their OSPs in order to maximize their potential impact (Cripps, 2011b). The following sections of the paper will endeavor to succinctly describe the development of OSPs at Nanzan University in its effort to maximize the learning opportunities and benefits of OSP participation.
2. Developing Overseas Study Programs: What does Nanzan University do?

Brewer and Cunningham (2009) claim that integrating study abroad programs into a university’s curriculum involves a delicate fusion of theory and practice. In short, they suggest that the development of OSPs must fit with the vision of student learning and development held by each university. This is an important factor and evident in OSPs available at most Japanese universities. The basic premise lies in the objective to create ways for students to increase intercultural understanding and foreign language ability, in the hope of preparing them for the demands of global society.

Until this point, a prominent theme in Nanzan University’s approach, and also in that of the OSPs of most Japanese universities in general, has been the focus on fostering and simulating the enhancement of intercultural competence. Research into OSP development focuses much of its attention on output, with intercultural competence frequently referred to as being an equally noteworthy outcome and benefit obtainable by students to that of increased foreign language proficiency (e.g. Vande Berg, Connor-Linton & Paige, 2009; Hudzik & McCarthy, 2012). Naturally, Nanzan University believes that students should be conscious of how learning a foreign language can be used as a tool to explore dynamic culture (i.e. communication styles, customs, values, behaviours) during the OSP experience.

As such, one of the areas in which Nanzan University stimulates consciousness of intercultural competence among its OSP students is through pre-departure intervention by way of OSP guidance. This guidance is usually conducted by administration staff directly involved in OSP services, as well as by chaperone teachers. Here, the use of completion reports by previous OSP students and observation reports by accompanying teachers proves to be a vital source of reference to help students develop effective strategies for life and study overseas. Above all, the most prominent thread in these reports relates to Japanese students having a high awareness of their self-identity as Japanese nationals and the ability, or willingness, to explain it during their OSP sojourn. As a result, they are able to compare and
understand cultural differences between their culture and that of the host country, which in turn leads to the establishment of culturally intelligent strategies.

With these goals in mind, the following section will first explain the current endeavors being conducted by Nanzan University—namely, its Nanzan Asia Program (NAP). Following that, it will outline how NAP is used as a platform for future development and introduction of other programs into Nanzan University’s OSP global design.

2.1 Current Endeavors: Nanzan Asia Program (NAP)

In 2000, Nanzan University opened a new faculty—the Faculty of Policy Studies (Nanzan University, 2014a). Keeping in line with the tradition of comprehensive English language programs in language and non-language faculties alike, this faculty sought the opportunity to add an OSP that focused on the languages and lifestyles of Asian countries. Known as the Nanzan Asia Program, NAP was established specifically to complement the strong focus on Japan-Asia relationships within the faculty’s curriculum (Nanzan University, 2014a).

After completing an intensive compulsory English program in the first year, students in the Faculty of Policy Studies are given a choice of other foreign language courses to take in their second year. They can choose from two options—‘on-campus two-semester foreign language study’ or ‘one-semester preparation class plus one month intensive study-abroad’ (NAP). The on-campus curriculum consists of German, Spanish, French, Korean and Chinese (Mandarin). For those students that choose the second option, NAP, there is a choice of seven Asian countries—Korea, Taiwan, China, the Philippines, and Thailand in the summer, or Vietnam, and Malaysia in the spring—with a maximum of 20 students per country. Table 1 shows the universities which provide the language and culture programs for NAP.
Table 1: Nanzan Asia Program Participating Universities

<table>
<thead>
<tr>
<th>Country</th>
<th>University</th>
</tr>
</thead>
<tbody>
<tr>
<td>China</td>
<td>Qinghai Nationalities University</td>
</tr>
<tr>
<td>Korea</td>
<td>Hannam University</td>
</tr>
<tr>
<td>Malaysia</td>
<td>Universiti Sains Malaysia</td>
</tr>
<tr>
<td>Phillipines</td>
<td>Ateneo de Manila University</td>
</tr>
<tr>
<td>Taiwan</td>
<td>National Cheng Kung University</td>
</tr>
<tr>
<td>Thailand</td>
<td>Khon Kaen University</td>
</tr>
<tr>
<td>Vietnam</td>
<td>Thang Long Institute of Technology</td>
</tr>
</tbody>
</table>

There are two overall aims of NAP. Firstly, this program aims to provide students with the opportunity to develop their language and cultural competency through intensive language classes on-campus at the collaborating universities. In addition to language instruction and culture-based activities, each country includes a number of field trips and home stays. The field trips differ depending on the country and are designed to reflect the cultural characteristics unique to each destination. For example, during the summer Philippine NAP, students are often able to visit NGOs and participate in volunteer trips such as cleaning up areas with rubbish problems. In the spring Vietnam NAP, students can visit mangrove plantations to view environmental measures undertaken by the local government, as well as Nissan factories to hear about and see first hand how Japanese companies are contributing to the local economy through their employment of local staff.

During the pre-departure preparation classes, students are able to start learning the language of their chosen country. Pre-departure language learning is kept simple and usually consists of an introduction to simple greetings as well as the writing systems of each country. It also provides the opportunity for NAP students to interact with the international students from NAP countries who are studying at the Faculty of Policy Studies. The international students volunteer their time to introduce basic expressions and cultural advice in the NAP preparation classes. Each of the NAP groups is
chaperoned by two full-time faculty teachers—one for the first two weeks, and the other for the final two weeks. These teachers also are in charge of the preparation classes and most have been a chaperone for at least one or two NAPs. Another major part of the preparation classes, therefore, is to guide students in terms of their required research output. In the semester following their return, all NAP students are required to give group presentations of approximately 45 minutes.

As Vande Berg, Connor-Linton and Paige (2009) have shown in their six-year research into language ability, intercultural awareness, sensitivity and communication competence results gained from OSPs at Georgetown University, in order for students to maximise the benefits of study abroad, educators need to intervene in their experience in the pre-departure and post-return stages. In the case of NAP, fieldwork content and data collection methods are developed and designed by the students. However, they are constantly encouraged to link their presentation content to one of the three policy study pillars of the faculty—International Policy, Public Policy and Environment Policy—through the advice and guidance of the chaperone teachers in the pre-departure stage. As a result, students are not only able to immerse themselves in the language and culture of their chosen NAP destination, but through qualitative or qualitative methods, they are also able to collect, analyze, and present information that will help them in their selected major research projects starting in the third year of their studies.

2.2. Future Developments: Short-term Study-Abroad Programs (SSAPs)

For many years Nanzan University has offered a comprehensive list of long-term study abroad options for students wishing to study overseas for six months or longer, by establishing long-term and often mutually-reciprocal relationships with many top-tier universities around the world (see the University’s homepage for details). Unfortunately, until recently, SSAPs have been overlooked. In line with the establishment of an on-campus new international center from 2017, a committee has been set up to develop an equally comprehensive and worthwhile list of SSAP options for Nanzan students.
As discussed above, NAP is a very thorough program that has been designed to stimulate students in terms of language learning and intercultural learning. Using this successful program as a model, Nanzan University is now beginning to expand its SSAP initiatives. The two main initiatives currently being developed are: (1) English-language focused SSAPs and (2) Faculty-specific SSAPs.

With regards to (1) English-language focused SSAPs, two overseas study programs will be piloted in 2015—one in New Zealand (English Language Academy, University of Auckland) for one month in March and one in Hawaii (N.I.C.E., University of Hawaii) for one month in August. These two programs have been created to further develop Nanzan’s SSAPs. In short, they both seek to offer an easier introduction to the OSP experience for students who are less confident of spending a long period of time living and studying overseas.

As for (2) Faculty-specific SSAPs, this is the area in which the NAP model will be used as a guide and point of reference for similar SSAPs in other faculties, due to the fact that NAP has been successful in striking a balance between language, culture, and content in the program. The development of a faculty-specific SSAP requires careful thought based on two sources of reference—faculty needs and student needs. The targeted faculties for such development are the Faculty of Law, Faculty of Economics, Faculty of Business Administration, Faculty of Science and Engineering and the Faculty of Humanities. All these faculties have students that take compulsory English courses in their first two years, and are not English majors, unlike those in the Department of American and British Studies, and the Faculty of Foreign Studies.

Presently a needs analysis is being conducted to ascertain the level of interest in SSAPs and the kind of content hoped for by the faculties and their students. Once this data has been collected and analyzed, the next step will be to contact overseas partner universities and their language centers to begin the process of program creation. Acting as the catalyst for development, the international center committee will facilitate each SSAP to the stage at which they can be realized. Meanwhile, each faculty will also be led through the NAP pre-departure preparation model so as to ensure their curriculum development runs smoothly. The expected result is one that
sees the NAP model emulated, which in turn will enhance the global design of the university curricula as a whole.

3. Considerations: Where do we go from here?

At this juncture, it is important to focus on future considerations in the overall scope of SSAP design and implementation. This paper has described current and near future implementations of general and faculty specific SSAPs. However, the true test of a university’s SSAP global design can be found in the word ‘global’ itself and in the successful outcomes of OSPs initiated.

Before providing suggestions for areas of further development, it is important to recognize the areas for improvement in the existing NAP program. On the whole, the NAP program is extremely successful, but through regular feedback gained from responses collected from surveys completed by teachers and students participating in the program, areas in which improvements can be made are: (1) program content consistency and (2) follow-up guidance upon return to Japan.

In terms of (1) program content consistency, the major challenge still facing the NAP program relates to output. Presently, two of the seven participating universities—Universiti Sains Malaysia (Malaysia) and Hannam University (Korea) have incorporated a final presentation as part of the NAP program. It is delivered by the NAP students from Nanzan University in front of the teachers and students of the participating university with the contents consisting of the field research results they gather during the program. Not only is it a good way of presenting their findings to the local university audience, but it also acts a practice run where they can receive feedback to use in preparation for the formal presentation waiting for the NAP students after returning to Japan. As for (2) follow-up guidance upon return to Japan, the other most common response to areas for improvement is that of formal guidance by Nanzan University regarding how the experience and skills gained from NAP can be utilized in the students’ remaining time at the University. At this point in time, Nanzan University is working on ways to address these concerns: (1) by asking all participating universities to include a final presentation of NAP student findings at the
end of the NAP program and (2) by working with research project teachers and student guidance support staff at Nanzan University to create opportunities to follow up with advice on how the students’ experiences and output can be further utilized.

Presently, the SSAP initiative at Nanzan University focuses primarily on its existing NAP and newly-developed, English language-focused SSAPs in New Zealand and Hawaii from 2015. In the future, for Nanzan University to become truly global in terms of SSAPs, it will need to consider an equal balance covering all languages available as major and minor subjects: Spanish, German, French, Korean, and Chinese. Needless to say, the successful implementation of new SSAPs will act as points of reference for the other language programs, and therefore it is imperative that they are successful.

Another often overlooked area of potential is that of reciprocity, namely the establishment of Nanzan-bound SSAPs hosted by its Center for Japanese Studies (CJS). Established in 1974, the Center for Japanese Studies at Nanzan University has secured a high reputation in the fields of Japanese language, Japanese culture, Japanese history and Japanese business studies (Nanzan University, 2014b). Presently, many of the overseas partner universities that send students to this program opt for longer-stay options of between three to nine months. Therefore, mirroring the SSAPs being developed for Japanese students going overseas into the CJS program may be one way of appealing to a wider overseas audience of Japanese learners at different stages of their language development.

4. Conclusion: What does it all mean for Nanzan University?

This paper has endeavored to shed light on the global design of its SSAPs and the aims that drive their development. Needless to say, the main concept behind these activities is to be able to provide Nanzan University students with a comprehensive array of programs which can make significant contributions to the internationalization of the University curricula and respond to the motivations of students to become global citizens.
As Hudzik and McCarthy (2012) suggest, SSAP goals should encompass a strong sense of international engagement not only by the students, but also by the educational institute providing such programs. For Nanzan University, this means that a constant review of campus-wide consciousness of the benefits of increasing general and faculty-specific SSAPs is required. As previous studies into OSPs suggest, a clear framework which informs students of the positive outcomes related not only to improved foreign language proficiency, but also enhanced intercultural communication competence and understanding, is paramount. To that end, as the above-mentioned SSAPs develop, ownership of their contents and benefits by each faculty at Nanzan University will become imperative. In other words, only through collaboration with each faculty in the overall global design can Nanzan University expect to realize a balanced view of the academic benefits to students—foreign language and intercultural competence—that is consistent with its long term goal of campus internationalization.

References


Investigating the Lexical Frequency Levels of the Reading and Listening Sections of the
TOEFL Internet-Based Test Using the BNC/COCA Word Lists

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Abstract

The present study investigated the lexical frequency levels of the Reading and Listening sections of the TOEFL Internet-based Test (TOEFL iBT). Corpus-based studies estimating vocabulary levels of the TOEFL iBT exist, however, there is a limitation with past published text-coverage studies in that wordlists derived from the British National Corpus (BNC) were used to determine the vocabulary levels (e.g., Chujo & Oghigian, 2009; Kaneko, 2014, in press). However, as Nation (2004) acknowledges, the BNC is mainly written and British, which may not be most appropriate in exploring the TOEFL test. To address this issue, Nation’s newly created (2012) wordlists derived from the BNC and the Corpus of Contemporary American English (COCA) were used in the present study. The analysis was based on the reading and listening passages from 5 past TOEFL iBTs (Educational Testing Service, 2013). Incorporating the coverage figures for proper nouns and marginal words into net coverage figures, it was found that the most frequent 5,000 word families accounted for 95.37% of the running words in the reading passages, and that 11,000 word families yielded 98% coverage. Concerning the listening passages, it was found that the first 3,000 word families provided 96.22% coverage, and that additional 2,000 word families yielded 98.18% coverage. The findings of the present study as well as findings reported in Kaneko (2014, in press) suggest that the BNC/COCA wordlists may yield slightly higher coverage for the TOEFL test than solely BNC-based lists (Nation, 2006).
Investigating the Lexical Frequency Levels of the Reading and Listening Sections of the TOEFL Internet-Based Test using the BNC/COCA word lists

According to the Educational Testing Service, the developer of the Test of English as a Foreign Language (TOEFL), more than 9,000 academic institutions worldwide accept this standardized test. In English as a Foreign Language (EFL) contexts, the TOEFL test is of importance because non-native speakers of English are often required to submit a TOEFL test score in order to enroll in an English-speaking university. For instance, Arizona State University, one of the top 25 institutions hosting international students (Institute of International Education, 2013), requires international students to submit a minimum score of 61 points in the TOEFL Internet-based Test (iBT). The TOEFL test is also used to measure English proficiency of EFL learners. The advisory panel of the Japanese Ministry of Education, Culture, Sports, Science, and Technology is planning to use third-party English proficiency tests including TOEFL to measure English proficiency of Japanese high school graduates (Miki & Sakaguchi, 2014, October 24). If this suggestion is followed, the TOEFL test will be used to help determine admission to universities in Japan. Considering these benefits of taking the TOEFL test, one may wonder how students can be successful in the TOEFL test. It is not reasonable to consider that one particular knowledge or skill will suffice for the test because the TOEFL iBT consists of four sections: Reading, Listening, Speaking,
and Writing. However, if we divide the four sections into receptive (i.e., reading and listening) and productive purposes (writing and speaking) and focus on the receptive skills, corpus-based studies have revealed that vocabulary is one of the most important factors in determining the success in reading and listening. Research investigating the effect of the percentage of known words in a text, or text coverage, on comprehension has suggested that 95% or 98% coverage is necessary to achieve adequate reading comprehension depending on the desired comprehension level (Hu & Nation, 2000; Laufer, 1989; Laufer & Ravenhorst-Kalovski, 2010; Schmitt, Jiang, & Grabe, 2011). Research has also shown that text coverage affects listening comprehension (Bonk, 2000; Stahr, 2009; Van Zeeland & Schmitt, 2013).

Researchers have estimated a vocabulary size target for the TOEFL test using text coverage. Excluding studies measuring the lexical frequency of the past versions of the TOEFL tests (i.e., Paper-based Test and Computer-based Test), only three studies have been published so far. Chujo and Oghigian (2009) were the first to set a vocabulary size target for the TOEFL iBT. In the study, a set of one official/unofficial TOEFL iBT practice test was examined. Based on the frequency levels of Nation’s (2006) word-family lists derived from the British National Corpus (BNC), a vocabulary of around 3,000–4,000 word families was set as a target, which yielded 95% coverage on the two tests. However, there is a serious limitation with Chujo and Oghigian’s study in that vocabulary from spoken and written texts
was mixed. Research has demonstrated that spoken texts require smaller vocabulary sizes than written texts (McCarthy & Carter, 1997; Nation, 2006; Schonell et al., 1956), indicating that text coverage figures derived from mixed written and spoken texts can be underestimated. To address this methodological issue, Kaneko (2014, in press) estimated vocabulary size targets for the reading and listening sections of the TOEFL iBT respectively. The analysis was based on reading and listening passages from five real past TOEFL iBTs (Educational Testing Service, 2013). Using Nation’s BNC word-family lists, it was found that the most frequent 6,000 word families plus proper nouns and marginal words as well as words that are defined in the passages accounted for 95% of the running words in the reading tests, and that it took around 11,000 word families to achieve 98% coverage (Kaneko, 2014). Concerning the vocabulary size target for the listening section, it was found that the most frequent 3,000 word families from Nation’s BNC word-family lists plus proper nouns and marginal words were sufficient to yield 95% coverage, and that an additional 3,000 word families from the 4,000 to 6,000 frequency level enabled to reach 98% coverage (Kaneko, in press).

Although Kaneko’s two studies addressed one methodological issue with Chujo and Oghigian’s study, there still remains a limitation in that the BNC-based word lists were used to determine the lexical frequency of the TOEFL test. In determining the lexical frequency level of the TOEFL test, Nation’s BNC word lists may not be most appropriate because the corpus is mainly written and British as pointed out by Nation (2004). In fact, some words that
are common in American English such as *goof* are found in the listening section of the past TOEFL iBTs. Therefore, it can be assumed that word lists incorporating American-English samples such as Nation’s (2012) newly created word lists derived from the BNC and the Corpus of Contemporary American English (COCA) may provide higher coverage figures in the TOEFL test than Nation’s previous word lists based on the BNC.

There are two main aims of the present study: 1) to investigate how large a vocabulary is required to reach 95% and 98% coverage of the Reading and Listening sections of the TOEFL iBT using the BNC/COCA word-family lists, and 2) to explore whether the BNC/COCA word lists provide higher coverage figures in the reading and listening sections of the TOEFL iBT than the BNC word lists.

**Method**

**Samples and RANGE program**

To ensure a meaningful comparison between findings of the present study and those reported in Kaneko’s two past studies (2014, in press), the same samples were explored. Reading and listening passages from five real past TOEFL iBTs (Educational Testing Service, 2013) were examined using a lexical frequency profiling program called RANGE (Heatley, Nation, & Coxhead, 2002). Each reading test was electronically scanned and the five reading tests were combined into one text. The listening tests followed the same procedure. Two
modifications were made to the output texts before the analysis. First, space was added before and after hyphens found in all the hyphenated words. Second, connected speech appearing in the listening text was modified to separate word forms because RANGE cannot recognize some connected speech. For instance, sorta was split into the separate components (i.e., sort + of). Without this modification, RANGE would categorize sorta as a word beyond the 14,000 or 25,000-word frequency level although both sort and of are in the 1,000-word frequency level.

The modified reading/listening texts were analyzed using the RANGE program to determine the lexical frequency levels.

**Word lists**

Nation’s (2012) newly created word-family lists derived from the BNC and COCA were used in the present study. Although the entire BNC/COCA word-family lists can measure frequency levels up to 25,000 words, the present study focused on coverage figures of the first 14,000 words because 1) Nation’s BNC word-family lists contain 14,000 word families and that 2) the most frequent 14,000 word families would be sufficient to achieve 98% coverage in the reading and listening sections of the TOEFL iBT considering the findings of Kaneko’s studies. Coverage figures for vocabulary beyond the 14,000-word frequency level and outside the BNC/COCA lists were combined into the *Not-in-the-lists*
Results

Table 1 illustrates the cumulative coverage figures of the BNC/COCA word-family lists in the reading and listening passages from the five past TOEFL iBTs. In text-coverage studies, proper nouns and marginal words are often considered as known words (e.g., Nation, 2006; Webb & Macalister, 2013; Webb & Rodgers, 2009a, 2009b). The present study followed this procedure, so coverage figures for proper nouns and marginal words were added to those of the most frequent 1,000 word families and beyond. Including proper nouns and marginal words, it was found that the most frequent 4,000–5,000 word families from the BNC/COCA lists yielded 95% coverage of the reading text, and that it took the most frequent 11,000 word families to reach 98% coverage. Concerning the listening text, it was found that the first 2,000–3,000 word families were sufficient to account for 95% of the running words, and that 98% coverage was achieved with a vocabulary of the first 4,000–5,000 word families.
Table 1

*Cumulative Coverage Figures of Nation's BNC/COCA Word Lists in the Reading and Listening Passages From 5 Past TOEFL Internet-Based Tests*

<table>
<thead>
<tr>
<th>Frequency band</th>
<th>Reading passages (%)</th>
<th>Listening passages (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proper nouns</td>
<td>2.71</td>
<td>0.75</td>
</tr>
<tr>
<td>Marginal words</td>
<td>2.81</td>
<td>1.64</td>
</tr>
<tr>
<td>1,000</td>
<td>71.93</td>
<td>85.4</td>
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<td>2,000</td>
<td>83.05</td>
<td>92.21</td>
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<td>3,000</td>
<td>90.45</td>
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<td>94.06</td>
<td>97.56</td>
</tr>
<tr>
<td>5,000</td>
<td>95.37</td>
<td>98.17</td>
</tr>
<tr>
<td>6,000</td>
<td>96.21</td>
<td>98.62</td>
</tr>
<tr>
<td>7,000</td>
<td>96.67</td>
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<td>8,000</td>
<td>97.24</td>
<td>98.96</td>
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<tr>
<td>9,000</td>
<td>97.47</td>
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<td>11,000</td>
<td>98</td>
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<td>12,000</td>
<td>98.15</td>
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<tr>
<td>13,000</td>
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<td>99.47</td>
</tr>
<tr>
<td>14,000</td>
<td>98.6</td>
<td>99.47</td>
</tr>
<tr>
<td>Not in the lists</td>
<td>100.01*</td>
<td>99.88*</td>
</tr>
<tr>
<td>Tokens</td>
<td>10624</td>
<td>20948</td>
</tr>
</tbody>
</table>

*Note.* The total percentage is not 100 because of rounding.

**Discussion**

To summarize, the most frequent 4,000–5,000 word families and 11,000 word families were required to yield 95% and 98% coverage respectively for the Reading section of the five past TOEFL iBTs. With regard to the Listening section, the most frequent 2,000–3,000 word families and 4,000–5,000 word families were sufficient to provide 95% and 98% coverage. Comparing the results of the present study with coverage figures derived from Nation’s BNC lists reported in Kaneko’s studies (2014, in press), it appears that the BNC/COCA lists provide higher coverage figures for the reading and listening sections of the
TOEFL iBT. To reach 95% coverage in the combined reading text by the BNC lists, the most frequent 6,000 word families were required, showing that there was a 1,000-word-family difference in vocabulary size between the BNC/COCA lists and the BNC lists. For the listening text, the most frequent 3,000 word families from the BNC lists were required to provide 95% coverage. This demonstrated a difference of 1.23% in coverage figure between the BNC/COCA lists and the BNC lists. Although a significant difference in coverage figure was not found to reach 98% coverage in the reading text, there was a 1,000-word-family difference in vocabulary size to reach 98% coverage in the listening text.

The findings of the present study suggest that the BNC/COCA word lists may yield slightly higher coverage for the reading and listening sections of the TOEFL iBT than the BNC-based lists, indicating that the corpus used to compile word lists should match the text to be analyzed to achieve a maximum coverage figure. If this holds true, the BNC lists should provide higher coverage for British-English-based proficiency tests such as the International English Language Testing System (IELTS) than the BNC/COCA lists. Hopefully, future text-coverage studies will investigate this hypothesis.
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Title of the Submission
Closing the Algebra Achievement Gap Through the Responsive Teaching Cycle (RTC)

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Topic Area: Cross-disciplinary Areas of Education
Presentation Format: paper

Thank you.
Joelle Vega
Conference Coordinator

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To whom it may concern,

Attached please find my title page and abstract for consideration for HICE 2015.

Thank you.

Sincerely,

Hiromi Hadley
Niigata University
The Perception of Preservice Mathematics Teachers on the Role of Scaffolding in Achieving Quality Classroom Instruction

By
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Abstract: This paper was designed to investigate the perceptions of four mathematics inservice teachers on the role of scaffolding in supporting and assisting them achieve quality classroom teaching. A collaborative approach to teaching through a community of practice was used to obtain data for the two research objectives that were postulated. Two methods were used to collect data for the research which includes classroom observations and the reflection meetings. While the researcher adapted the grounded theory approach to collate and discuss the data collected for the study. The findings of the study suggested that the researcher uses varied approaches to providing scaffolding to the teachers and the teachers’ perception of the role of scaffolding was positive as the view scaffolding as providing the opportunity to observe one another strength and weakness and that it also provided opportunity for them to discuss, dialogue, debate and criticize one another thoughts in the process to their achieving quality classroom instruction. In conclusion the researcher suggested that scaffolding could be a useful approach to helping teachers achieve quality classroom teaching and to having positive perceptions to teaching in general and therefore recommend that the adoption of scaffolding strategies to Nigerian mathematics classroom could help improve the persisted uninterested mathematics classrooms which had pervaded our classroom teaching and learning for decades.

Introduction:

Mathematics teachers’ inadequate teaching strategies have been advanced as one of the major challenges confronting mathematics classroom teaching and its effectiveness in Nigerian secondary schools (Omorogbe & Ewansiha, 2013). Teaching mathematics in most classrooms in Nigerian secondary schools sometimes looks frustrating to teachers Wilson (1993) and boring to students (Onose, 2009). These challenges had made mathematics classroom instructions a case of concern to teachers and sometimes make students dislike both the mathematics as a subject, and indeed the mathematics teachers. Students sometimes demonstrate these by skipping mathematics classrooms particularly at the senior secondary school levels, not minding the fact that mathematics is a compulsory subject at this level.

Adopting a particular teaching strategy that will help resolve these problems had also become a great challenge to most mathematics teachers. Perhaps, this is as a result of insufficient methodological training these teachers received during their preservice years in the universities or colleges of education (Johnson 2004; Nwagbo, 1999). Abdulahi (2007) and Ogbeba (2010) observed that most mathematics teachers’ lack adequate knowledge of subject matter and competence to deliver quality mathematics classroom instruction to their students. This sometimes forced some of these ill-prepared mathematics teachers adopt theoretical approaches to classroom instruction (Halai, 1997; Obodo, 2004) rather than the practical aspects of mathematics instructions that had make mathematics real and practical to students in most developed countries around the world (Ngannu, 2001).
Onose (2009) observed that it is painful seeing mathematics teachers teach mathematics in abstraction, thereby making the mathematics classroom instruction boring to students. This has made some students find it difficult to grasp some mathematical concepts, skills and principles that are vital to their educational development. Similarly, Abdulahi (2007) and Ogbeba (2010) stressed that the mathematics classroom instruction has been reduced to descriptive exercises through the use of the traditional teaching approaches with very little of students centred classroom teaching approaches. Perhaps, that is why in an earlier study conducted by Ayodele (2006) suggested that the use of inappropriate non-effective teaching strategies are a major factor hindering students understanding and achievement in mathematics in most Nigerian secondary schools. He went further to assert that effective teaching of mathematics do not require theoretical and lecture teaching approaches or the applications of the teacher-chalk teaching approaches that had dominated most Nigerian mathematics classrooms.

In view of these challenges, studies on mathematics classroom teaching effectiveness has revealed that, there have been some successful attempts to improving mathematics teachers teaching effectiveness. A range of educational policies and programmes on teachers’ effectiveness had also been identified particularly in Nigerian mathematics classrooms (Oyedeji, 2000; Adewale and Amoo, 2004). Perhaps that is why the Federal Government of Nigeria through its National Policy on Education FGN (2004) asserted that no educational system can rise above the quality of its teachers. Boaler (2008) supported this view by suggesting that, effective teaching of mathematics does not only involve the precise presentation of knowledge through facts and following the lay down rules of legalistic formulas, but it involves changing the ways secondary school mathematics teachers think, and how they build on their current understandings of teaching, and the effort they made in addressing any prior misconceptions on their teaching approaches.

Research studies suggest that developing in teachers particularly, the preservice teachers the ability to engaged their students in solving life related problems (Anderson, 2003) choose tasks that require students use of higher-order thinking and sustain engagement (Henningsen & Stein, 1997) and helping students make connections between mathematical ideas (Lambdin, 2003), could lead to students attitudinal change to mathematics (Bature & Bature, 2006), attitudinal change to mathematics teachers and develop in teachers themselves some confidence towards teaching mathematics (Bature & Bature, 2005; Omorogbe & Ewansiha, 2013). This suggests that, becoming a quality mathematics teacher involves helping the teacher acquired some mathematics subject matter knowledge and its methodological approaches (Omorogbe & Ewansiha, 2013; Verenikina & Chinnappan, 2006).

It is worthy to note that the teaching of mathematics globally has moved beyond mere dichotomized thinking were rules and procedures are strictly followed (Stacey, 2003). But it requires a broader appreciation of varied and complex roles in which quality teachers of mathematics need to engage their students into (Boaler, 2008; Kilpatrick, Swafford, & Findell, 2001; Lobato, Clarke, & Ellis, 2005; Okafor, 2007; Sherin, 2002). It is also important to note that, mathematics teachers need to developed the ability to transform written knowledge into forms that are pedagogically powerful and yet adaptive to students’ abilities and backgrounds (Kilpatrick, et al, 2001; Lobato et al, 2005; Okafor, 2007; Sherin, 2002). These can be achieved, when mathematics teachers particularly during their teachers development programs or preservice years are trained to developed strategies that will make their students learn to achieve their goals and not just being able to repeat routine
mathematical computations through recitations or the use of rules and routine formulas (Omoifo, 2012; Omorogbe & Ewansiha, 2013).

Deep understandings of the theoretical framework that support these pedagogical practices of helping preservice teachers achieved their goals are essential for the development of mathematics teachers teaching competence (Abdulahi, 2007) and their ability to cause a change in the unfriendly mathematics classroom environment that had persisted in most Nigerian mathematics classrooms for decades (Ogbeba, 2010). However, from experience as a teacher educator in Nigeria, there seem to be lacking in the Nigerian teacher education development programs certain teaching approaches that will help both the practicing mathematics teachers and the pre-service teachers achieved quality classrooms instruction.

This is because, the teacher education development programs in Nigeria for decades had seems to be too theoretical and not helpful for novice teachers to understand those pedagogical skills necessary to develop effective classroom instruction. Helping teachers acquire theoretical knowledge of effective teaching strategies is not sufficient, mathematics teachers also need to have practical knowledge on how quality classroom teaching strategies could be develop. This is an essential tool that will provide such mathematics teachers with quality teaching skills that will enhance their productivity during classroom instruction. One of these teaching skills called “scaffolding” is the focus of this paper.

This paper will make used of some keywords to demonstrate how these skills could be developed using the concept of scaffolding in a community of practice. The term Adult-teacher, will be used to mean a more matured teacher helping other teachers achieved quality classroom teaching. The term collegiate colleagues will be used to mean a group of teachers working together to help one another improved their teaching practices. While the term teacher-learner will be used to mean the teacher that is being helped to improve his classroom teaching either by the adult teacher or the collegiate colleagues. This paper is aimed at identifying the role of scaffolding and the perceptions of teachers on scaffolding when they were introduced to the term before their classroom instruction. Specifically, this paper seeks to examine the following objectives:

1. To discuss the various methods and means employed to provide and identify areas the preservice teachers needed scaffolding
2. To determine the perceptions of teachers on the role of scaffolding in achieving quality mathematics classroom teaching

The term scaffolding was introduced by Wood, Bruner and Ross in 1976. This term can be interpreted and applied to mathematics classrooms instructions to mean the support given to students by their teachers and can also be used in terms of support given to teachers before, during and after their classrooms instruction. This is with the aims of improving not just the mathematics classroom teaching but also students learning. This term was never used by Vygotsky (Verenikina & Chinnappan, 2006). However, it was introduced in an attempt to operationalise the concept of teaching and learning in the Zone of Proximal Development (ZPD) (Wood, Bruner, & Ross, 1976; Verenikina, 2004). The Zone of Proximal Development is viewed as the distance between what a teacher can do with help and what he can do without help (Vygotsky, 1978). This term is used to explain the social and participatory nature of teaching and learning in relation to the support the teacher received either from collegiate colleagues or from a more experience teacher (Adult-teacher). This suggest that supporting teachers active participation in their teaching practices and assisting them in becoming self-
regulated teachers is essentially an important ingredient to mathematics teachers classroom teaching (Verenikina & Chinnappan, 2006).

The main aspiration of teaching in the Zone of Proximal Development is to see mathematics teachers being actively engaged in their teaching-learning practices with the prospect of helping them becoming self-directed mathematics teachers. This suggests that the interpretation of the meaning of the Zone of Proximal Development points to the fact that effective teaching focuses on the transformation of socially constructed knowledge into that which is individually owned. This type of teaching assumes a specific paradigm of adult-teacher/teacher-learner interaction where the role of the adult-teacher is that of a collaborator and co-constructor of the knowledge being constructed (Verenikina and Chinnappan, 2013). This point to the fact that, strong emphasis made by the adult-teacher is aimed at making the teacher-learner an active self-dependent teacher in his effort to improving the teacher-learner teaching skills and strategies. From the Vygotsky view, scaffolding could be viewed as the role of an adult-teacher supporting the teacher-learner development through the provision of supportive structures to get the teacher-learner to that next stage or level of his/her teaching competence (Raymond, 2000).

In interpreting the Vygotsky Zone of Proximal Development, it suffices to suggest that the educational process should be based on the ability of the adult-teacher and the teacher-learner’s engagement in an individually and collaborative activity, where the teacher-learner is the director of the social environment in his/her classroom, the governor and guide of the interactions between the educational process and his/her students (Vygotsky, 1997), and the adult-teachers served as a support to the teacher-learner teaching effectiveness before, during and after the mathematics classroom instruction.

Before, implies the adult-teachers’ support and help the teacher-learner’s preparation for the content of the lesson to be taught, the methodology to be adopted and the resources required to make the classroom instruction of the teacher-learner a fruitful and a successful one. During, implies the support the adult-teacher gives during the lesson. However, during the classroom instruction the adult-teacher does not influence the teacher-learner directly, but through shaping and reshaping the social environment of the teacher-learner through indirect instruction and support. And after, implies the support the adult-teacher gives after the lesson. This can be in terms of reflection, revision of the observed lesson on the areas of strength and weakness. The way the adult-teacher interacts with the teacher-learner suggest an essential tool for supporting teacher-learner active and self-dependent teaching learning practice (Diaz, Neal, & Amaya-Williams, 1990, in Moll, 1990).

The overall interpretation of the term scaffolding in current educational research is exceedingly diverse and often described as a term used for any kind of support given to teachers in order to increase their effectiveness and productivity during mathematics classroom instruction (Jacobs, 2001). It is also worthy to note here that one of the most important aspect of scaffolding is that which make the scaffolds temporary (Van Der Stuyf, 2002). This is because as the ability of the teacher-learner increases, the scaffolding provided by the adult-teacher is progressively and systematically withdrawn (Van Der Stuyf, 2002). Therefore the goal of the adult-teacher when using scaffolding is to make the teacher-learner become independent and self-reliant in his/her teaching competence (Hartman, 2002). According to Vygotsky the scaffolds provided by the adult-teacher can then be removed because the teacher-learner has developed some more sophisticated cognitive abilities in his/her teaching practices (Raymond, 2000).
Scaffolding has been viewed to be from different levels as identified in cognition literature. For example, Rogoff (1995) postulated three qualitatively different levels of socio-cultural activities that issued in an out-of-school setting. This could be referred to as apprenticeship, guided participation, and participatory appropriation scaffolding levels (Siemon & Virgona, 2003). These different levels of scaffolding trace the development of a teacher-learner within a socio-cultural enterprise in terms of dependent-novice-teacher to an independent-practitioner-teacher. Brown, Collins & Duguid, (1989) in their own study also identify another three phase model of scaffolding and suggested that it could be describe as a gradual progression from an embedded activity to a reflective activity. Research studies on the analysis of scaffolding mathematics teachers’ practices also suggested that there are three levels of teacher support. On the first level, Anghileri (2002) and Siemon and Virgona (2003) were of the view that scaffold tend to refer to those prompts and stimulus actions that exist around the teacher-learner, either as a result of conscious planning or by default. This help to support the teacher-learners teaching approaches during mathematics classrooms instruction.

On the second level, (Anghileri, 2002) suggested that scaffolds involve direct interactions between adult-teachers and teacher-learner, focussing specifically on the task at hand. And that the strategies employed during these interactions ranges from the adult-teacher direct instruction to showing and telling the teacher-learner how to be more collaborative during meaning making process. This type of scaffolding according to Anghileri, include the types of interaction patterns commonly found during traditional classroom teaching approaches. It supports the adult-teacher maintaining control, structures conversations, elaborates, and explains to the teacher-learner what should be done and what should be avoided (Anghileri, 2002; Siemon & Virgona, 2003).

The third level of scaffolding postulated by Anghileri, (2002) suggested that making connections between the teacher-learner prior knowledge and experience and the new mathematics content to be taught should be developed as a representational tool in the process of generating conceptual discourse. During this level of scaffolding, teacher-learners are likely to engage in longer discussions that are more meaningful to their classroom experience. These meaningful discussions could arise from the shared ideas between individuals in the community of practice (Anghileri, 2002) or issues raised based on observations of the previous classrooms instruction.

A growing number of other teacher educators and researchers have also used the concept of scaffolding as a metaphor to describe and explain the role of the adult-teacher in assisting the teacher-learner teaching effectiveness during mathematics classroom instruction (Stone, 1998; Daniels, 2001). For example, scaffolding as a metaphor in teaching and learning is viewed as a process of temporary assistance given to the teacher-learner by the adult-teacher. During this process, the adult-teacher support the teacher-learner constructed his/her knowledge, in which the process continues until the teacher-learner is self-dependent. Since the introduction of this metaphor in the field of child psychology, it has become popularized, and currently seems to be a very powerful tool for conversation in general education (e.g. Dennen, 2004; Wells, 1999), and in teacher education (Mercer, 1995; Oxford, 1997; Tudge, 1990; Van Lier, 1996, 2004, 2007, 2008; Walqui, 2006; Walqui & Van Lier, 2010).

Numerous studies have also detailed the elements of collective scaffolding. In their analysis of peer scaffolding in a community of practice, Brown et al. (1993) focused on differences in each teacher Zone of Proximal Development, analysing the role that an individual’s area of expertise played in a small group’s ability to successfully scaffold teaching using the
community of practice approach. From the findings of Brown et al, they were of the view that each member of the community made contributions based on his/her background knowledge, experience and strengths. Studies conducted by De Guerrero and Villamil (2000) on the evidence of symmetry/asymmetry of power distribution amongst collegiate colleagues brought about the interchangeability of ideas among the members of the community and the role it plays in forming and reforming the teaching ability of the members of the community.

Building on the earlier research findings of Ohta (1995) on the factors affecting the success of group scaffolding similar to the community of practice adopted in his study, Anton and DeCamilla (1998) emphasized the importance of inter-subjectivity, which they defined as the shared perspective of a task and ideas within the members of the group. This inter-subjectivity of ideas helped the members of the community to check the ways each other teaches and help keep them make sure they were all on track (Boblett, 2012). Boblett in his own study suggest that collective scaffolding represented an important ingredient in the interpretation of the concept of metaphor as it applies to effective classroom teaching.

In particular, recent research findings globally had identified a number of roles and benefits for using scaffolding in developing mathematics teachers’ competence. For example, scaffolding could be used to improve teacher-learners teaching effectiveness (Anghileri, 2006; Anton & DiCamilla, 1998; Brown et al., 1993; DEST, 2004; De Guerrero & Villamil, 1994, 2000; Donato, 1994; Nyikos & Hashimoto, 1997; Ohta, 1995; Siemon, & Virgona, 2003; Tudge, 1990, 1992, Walqui, 2006). Anghileri (2006) was of the view that the interactions that can be effective between the adult-teacher and the teacher-learner are also important ingredient for introducing scaffolding to support the practitioners’ reflection and analysis of the teacher-learner actual classroom practices.

In another study, in an article ‘scaffolding numeracy the pre-service teachers’ perspective’, Verenikina and Chinnappan (2006) were of view that, the preservice teachers’ responses demonstrated the value of scaffolding as a helpful strategy for their future teaching practices and that scaffolding makes preservice teachers learnt better through social interactions with their collegiate colleagues. A central feature of interactions between members of the collegiate group makes classroom instruction a joint activity in which the members engaged in a community of practice, either during the classroom instruction or during reflective practices or meetings.

In view of these most educational researchers and teacher educators have stress the importance of understanding the metaphor “scaffolding” in conjunction with the theory from which it originated (Verenikina & Chinnappan 2006). In this paper the researcher examine the perception of four mathematics education preservice teachers working in the community of practice on the role scaffolding in improving their teaching practices.

**Methodology:**

In order to explore inservice teachers’ perceptions of the role of scaffolding in improving their classroom teaching, the researcher adopted a collaborative approach to data collection using a community of practice. Community of practice suggest a situation where all the participants were collaborate together in helping the members of the group achieved quality classroom instruction. The term “Community of Practice” was viewed by Eckert & McConnell-Ginet (1992, 464) as,
An aggregate of people who come together around mutual engagement in an endeavour (to identify) ways of doing things, ways of talking, beliefs, values, power relations – in short, practices – emerge in the course of this mutual endeavour as a social construct, a community of practice is different from the traditional community, primarily because it is defined simultaneously by its membership and by the practice in which membership engages.

This definition suggests that the concept of community of practice suggest a dynamic, rich, and complex research strategy. This is because it emphasizes the notion of “practice” as central to the participants or the members of the community. This understanding also suggest the rationale of the concept offering something different to educational researchers and teacher educator than the traditional term research approaches (Holmes & Meyerhoff, 1999).

For Lave & Wenger (1991), the concept of community of practice is one component of a social theory of learning, and Wenger (1998) uses it to critique traditional models of learning. Wenger argued that, abstract learning from the normal interactional contexts is requiring learners to assimilate material that the teachers have selected in an artificial environment. But in a community of practice learning is a natural and inevitable aspect of life, and a fundamentally social process which can be achieved through interaction between the members. He regards the concept of community of practice as a means of examining one natural method of learning which, in many respects, resembles an apprenticeship. The process of becoming a member of a community involves learning. We learn to perform appropriately in a community of practice as befits the membership status. Therefore adopting community of practice in this research suggests that there will be collaboration between members of the community in shaping and reshaping their mathematics classroom teaching abilities.

Four final year mathematics education preservice teachers (3 males and 1 female) from one university in Northern Nigeria where selected to collect data for this research. The researcher selected these mathematics education final year teachers purposively out of the 9 final year students for the 2011/2012 graduating set of the mathematics education department of the university. In the study, the researcher introduced the participants to the principles of scaffolding through a two-day workshop. The purpose of the workshop was to help the teachers understand the basic ideas they required to use to improve their teaching.

The teachers used the knowledge they gathered during the workshop to teach mathematics for a period of 6 weeks through a community of practice. The researcher also breaks the period into three cycles of two weeks each. During this period there were teachings and observations and at the weekend the preservice teachers with the researcher will meet for reflection meetings. The researcher sometimes supports the preservice teachers during classroom instruction. However, such supports were uncommon as to avoid distractions. Most of scaffolding given was generally during the reflection meetings where issues raised were discussed. Two instruments were majorly used for data collection during the research. First, there were classroom observations of the teaching practices of the participating teachers. These observations were done by the researcher and the collegiate colleagues. Secondly, there were reflection meetings after every two weeks of classroom teaching of the preservice teachers. Discussions during the reflection meetings were generally based on classroom observations of the preservice teachers. The data collected were collated, coded, and analysed using the grounded theory approach.
Results

Two research objectives were postulated to guide this study. First, the researcher wanted to know the methods and means employed to provide and identify areas the preservice teachers needed scaffolding and second, the perceptions of the preservice teachers on the role of scaffolding in helping them achieve quality classroom instruction were analysed.

Research object 1: To discuss the various methods and means employed to provide and identify areas the preservice teachers needed scaffolding

The need to implement a scaffold occurred when the adult-teacher realized that the teachers were not progressing on some aspect of a task or were unable to understand particular concepts. In this section, the researcher discusses the methods adopted to provide scaffolding to the preservice teachers. Generally, data collected suggested that the scaffolding provided to the preservice teachers were in the form of the conceptual, material and linguistic tools that supported the preservice teachers understanding of appropriate classroom teaching strategies to achieve quality classroom teaching. These conceptual, material and linguistic tools were in the form of literature, and research articles from the extant journals. They were also in the form of discussions, dialogues, debates and interaction that the researcher had with the teachers during the workshop, reflection meetings and in several one-to-one discussions.

Similarly, the scaffolding provided to the teachers adopted dialogue, discussions, debates and explanations between the adult-teacher and the teacher-learners or between collegiate colleagues. These discussions were characterised by comparatively lengthy interactions in a context of collaboration and mutual support. In most cases, these discussions came from the observations made by the preservice teachers on the classroom teaching of their colleagues, or issues raised by students and from the researcher’s personal observations on either the classroom practice of the teachers or the interactions during reflection meetings. Similarly, these discussions also come from the questions raised by the teachers on areas where they needed further clarification to improve or to achieve quality classroom teaching.

One of the means employed to identify areas the teachers needed scaffolding was through classroom observations. This assisted the researcher determined what kinds of scaffolds are appropriate and how much scaffolding is appropriate for each of the teachers to achieve quality teaching. For example, the researcher monitored the teachers’ responses to their students during their classroom teaching to find ways to ensure that the teachers made personal meaning of their experiences and develop a fuller understanding of the principles of effective classroom teaching. The researcher employed similar monitoring strategies during reflection meetings to identify the difficulties the teachers had and to provide scaffolding that assisted them achieve quality teaching.

Another area where observations were used as a means of identifying areas scaffolding was needed was what the researcher called peer observation. This is because observations and indeed the scaffolding was not only the responsibility of the researcher. Since the preservice teachers were working in a community of practice, they participated extensively in scaffolding their teaching practice. They were trained to observe their colleagues teaching practices particularly during the workshop and also through helps and assistance the received from the research. Generally, such classroom observations were used as a means to collect information about the progress and weaknesses of their colleagues. Information collected from such observations was used by preservice teachers during reflection meetings to reflect
on their practice and provide possible suggestions to improve one-another’s practice. It is important to note here that the researcher at the initial stage of the research was the sole provider of the scaffolding. However, as the research progressed the preservice teachers became more confident in their practice and hence contributed to the scaffolding on their practice. One of the teachers asserted that,

_The way the program was structured emphasises very challenging learning objectives, we received and provided support to one another, and not only is feedback given throughout the program but we actively sought for it, not only from the researcher, but also from colleagues._ (Jackson: Research Journal)

**Research objectives 2:** to determine the perceptions of teachers on the role of scaffolding in achieving quality mathematics classroom teaching

Data collected from this study suggested that the teachers viewed scaffolding as useful tools for improving their practice. For example, Jerry suggested that scaffolding provided, help them identify their areas of deficiencies and strengths. He was of the view that it will be difficult for the teaching to observe his/her areas of difficulties. As such, they need for collegiate colleagues to observe their weaknesses and strengths are very necessary. These helped them monitor their progress and identify their areas of strength and weakness. Jerry said,

_when a teacher is teaching he may not consider a particular situation necessary..., he may be thinking that he may have handled it..., that is why we have the observers..., so they are in a better position to know whether a particular element is demonstrated or not...; I cannot be presenting my lesson and be observing myself at the same time ..., (Jerry: Reflection Meeting)_

Similarly, the teachers were of the view that, the scaffolding provided helped boast their confidence and interest in teaching, as there is a feeling that someone somewhere is watching, and that what the teacher is doing stands to be criticised and corrected. Jennie was of the view that this encouraged her to do better during her classroom teaching.

_This helps me approach my research with a sense of belonging that there are people that will support, encourage and criticise you at each stage of your work._ (Jennie: Research Journal)

Another observation made by one of the teachers suggested that group scaffolding can help teachers give and receive helps, not necessarily from the adult-teacher, but from collegiate colleague. Jackson supported this by asserting that,

_The way the program was structured emphasises very challenging learning objectives, we received and provided support to one another, and not only is feedback given throughout the program but we actively sought for it, not only from the researcher, but also from colleagues._ (Jackson: Research Journal)

Data collected during the research also suggested that scaffolding helped mathematics teachers develop new strategies for problem solving. This could be transmitted to developing students’ problem solving skills. Jackson said,
The experiences of discussing with colleagues helped my problem solving skills, it provided opportunity for cooperative learning, and there is an enhanced level of immediate feedback. (Jackson: Research Journal)

Another benefits observed from scaffolding according to the teachers was that there were opportunities for dialogues and discussions among collegiate colleagues and between the adult-teacher and the teacher-learner. For example, Jackson was of the view that

The program was designed to help us build understanding, explore ideas, practise thinking through and expressing concepts that will help us achieve quality classroom teaching (Jackson: Research Journal).

Discussions and dialogue allows us teachers to have thoughts we could not have had on our own, yet to recognise these thoughts as developments of our own thinking. (Jackson: Casual Interview)

Jackson was also of the view that these discussions and dialogues assisted teachers in developing new strategies for reasoning, enquiry and negotiation of ideas and to provide opportunities for cooperation among collegiate colleagues. Jackson reflected that,

Personally, the experiences of discussing with colleagues helped my problem solving skills, it provided opportunity for cooperation, and there is an enhanced level of immediate feedback. (Jackson: Casual Interview)

Still on the benefit of dialogues, Jennie was of the same view as Jackson and suggested that this form of scaffolding helps build a framework to guide the teachers in developing and constructing their own ideas, skills, concepts and or processes to improve their practices. Jennie reflected,

when problems are generated we all discussed together to find a common approach that could be used to address such problems, this help me approach my research with a sense of belonging that there are people that will support, encourage and criticise you at each stage of your work. (Jennie: Casual Interview)

Finally, in Jackson’s view, dialogues and discussions provided avenues for the participating teachers to receive immediate feedback from collegiate colleagues. They also helped to strengthen and broaden the understanding of the collegiate group and provided feedback on their strengths and weaknesses during classroom teaching. For example he said,

The way the program was structured emphasises very challenging learning objectives, we received and provided support to one another, and not only is feedback given throughout the program but we actively sought for it, not only from the researcher, but also from colleagues. (Jackson: Casual Interview)

Conclusion:

Scaffolding has been a useful metaphor for thinking about classroom instruction and indeed in teachers’ development programs since its introduction by Lev Vygotsky (1978). This paper was designed to investigate the perceptions of four mathematics inservice teachers on the role of scaffolding in supporting and assisting them achieves quality classroom teaching.
Vygotsky viewed scaffolding as the role of the facilitator in supporting development and providing the necessary and effective support structures that will help teachers’ development to move to the next stage or level (Raymond, 2000) as demonstrated in the findings of this research. The study suggested that as the teachers’ knowledge, abilities and understanding increased; there was also an increase in their ability to achieve quality classroom teaching (Rogoff, 1995; Siemon & Virgona, 2003).

In the first research objective, it was observed that the scaffolding provided was in the form of conceptual, material and linguistic tools that supported the mathematics teachers understanding on how to achieve quality classroom teaching. These conceptual, material and linguistic tools were in the form of literature, and research articles from the extant journals. The findings also reveals that the scaffolding provided were also in the forms of discussions, dialogues and interaction that the researcher had with the participating teachers during the workshop, reflection meetings and in several unscheduled one-to-one discussions.

In view of this, the research objective 2 findings suggested that the scaffolding provided to the teachers helped them develop new understandings by linking their prior knowledge about classroom instruction to new knowledge and strategies which help the achieved quality classroom instruction. This prior knowledge and understanding became the subject of discussions, debates and deliberations among the collegiate colleagues through interaction between participants (Knezic 2011).

Still in research objective 2 suggest that the talk (theory) embedded in the actions (practice) of the teachers were observed in the study to have provided opportunities for the teachers to regulate the language and practice of one another in order to foster better understanding. From the Vygotskian perspective, dialogue between colleagues may range from casual talk to deliberate explanations about features of tasks to be performed (Dorn, 1996). Similarly, what may seem to be casual conversational exchanges between two or more people could actually offer more opportunities for fostering cognitive and language development (Clay, 2005; Lai & law, 2006).

Smagorinsky (2007) was in his study suggested that conversations between two individuals could facilitate generative, constructive, experiential, and developmental learning in an attempt to develop new ideas and knowledge. While Applebee (2002) believed that effective scaffolding provides opportunity for task-based dialogue between two or more participants which provides them with the opportunities to use their old knowledge and strategies necessary to complete and understand new tasks and principles and helps them to internalise the new knowledge and skills for eventual use in future tasks.

In conclusion, the finding of this study suggests a positive change of perceptions of the teachers towards their views about collegiate group teaching. They were able to see the members of the group as collegiate group rather than supervisors or inspectors of education. This implies that scaffolding activities has proven to be a useful tool in helping inservice teachers improved their practice. Its importance and uniqueness suggest that the teachers were actively involved in providing helps to their collegiate colleagues in a community of practice as supported in the study conducted by Clarke (2001). These perceptions also suggested that the knowledge the teachers received significantly add to their collective understanding of strategies to employ to achieve quality classroom teaching. In view of these the researcher will recommend the adopted of scaffolding strategies to mathematics classroom instruction particularly to preservice teachers in teaching practicum.
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The Perception of Inservice Mathematics Teachers on the Role of Scaffolding in Achieving Quality Classroom Instruction through a Community of Practice

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Abstract: The cry and concern about the quality of mathematics instruction our students received in most Nigerian secondary schools is not restricted to the educational experts. Parents, teachers, students, school administrators, proprietors and indeed the government are worried about the constant mass failure of students in mathematics in national and international examinations. The causes of these problems are not farfetched. This could include shortage of qualified mathematics teachers in the field, the overcrowded nature of mathematics classrooms, the poor teaching resources available for both teachers and students and the use of inappropriate teaching strategies by mathematics teachers in our schools. This paper sought to use a teaching strategy called scaffolding with the hope it will help these teachers improve their teaching practice. The researcher sampled a group of four mathematics student teachers in a university in north eastern Nigeria and introduced them to the concept of scaffolding through a two-day workshop. After that, they taught mathematics in one secondary school for a period of 6 weeks in a community of practice. There were observations of the mathematics teachers’ classroom teaching and reflection meeting after every 2 weeks. The findings of the study suggest that the perception of the student teachers to scaffolding was encouraging and the teachers also appreciated the use of scaffolding as an important tool for helping them improve their teaching practice.
Improvement in the Design Framework of Instructional Gaming Materials for Scientific Exploration Activities Through the Development of a New Game

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ABSTRACT

In Japanese upper-secondary schools, students are required to perform “Exploration Activities.” However, it is doubtful whether these activities contribute to raising student interest in learning science, help them to acknowledge that science knowledge is useful, or foster attitudes toward using science-learning outcomes in their daily lives. Therefore, we propose a design framework comprising lessons and instructional materials for science “Exploration Activities” that will help students learn to solve problems in daily life through scientific ways of thinking. Furthermore, we developed instructional gaming materials pertaining to earthquake disaster prevention. The purpose of this study is to improve and refine our design framework based on the results of trial lessons that implemented our gaming material. Additionally, we examine the framework’s versatility by developing new gaming material related to creating a suitable word sculpture for a campus festival. In the game, students must consider resources, energy, and environmental problems scientifically to generate devices and strategies for convenient, ecological living using technology. Moreover, students are familiar with this topic and prompted to consider not only how to manufacture a word sculpture, but also how to discard and reuse it.

INTRODUCTION

According to the Japanese National Course of Studies for upper secondary schools, students must learn at least one of the following subjects in science education: “Basic Physics,” “Basic Chemistry,” “Basic Biology,” or “Basic Earth Science” (Ministry of Education, Culture, Science, Sports and Technology [MEXT] 2009). For these subjects, “Exploration Activities” are required for each content unit, such as “energy and motion of objects.” In Exploration Activities, students are expected to increase their interest in science learning to foster a positive attitude toward utilizing scientific learning outcomes in daily life. However, it is doubtful that science exploration activities will play this expected role in the new curriculum, since teachers tend to emphasize preparation for university entrance examinations, and because there are insufficient examples in government authorized textbooks (Taguchi & Matsuda 2014).

Therefore, we believe it is necessary to develop an appropriate sample lesson and instructional framework to cultivate students’ scientific problem-solving abilities in daily life. The point of exploration activities is not to impart new scientific knowledge, but to teach students how to solve problems scientifically using the learning outcomes of science education. We also assert that appropriate problems for exploration activities should not have a single correct answer, since students need to explore cases in which there are two or more possibilities or even opposing hypotheses. We feel that these characteristics were suitable for application to the gaming techniques.

Based on the above discussion, instructional gaming materials were developed to help students utilize scientific learning outcomes for problem solving in daily life. The gaming materials examined an impending earthquake disaster in a specific district. As a sample case, we chose Ota-ku, Tokyo, and suggested that students consider risk factors that might lead to disasters if a large earthquake struck the region. These materials were developed according to the design framework shown in Figure 1.
This design framework is based on Matsuda’s (2013) student model for informatics and mathematics education. Matsuda states that it is necessary to teach scripted knowledge of problem solving, ways of viewing and thinking, and domain-specific knowledge to foster problem-solving abilities. Script knowledge of problem solving comprises five process indicated by squares, while the ways of viewing and thinking to be utilized in each process are indicated by balloons (see Figure 1). Circled numbers are compatible with informatics and
systematic ways of viewing and thinking; alphabetic characters are compatible with scientific ways of viewing
and thinking. Domain-specific knowledge is classified into two categories: one is relatively generic and utilized
in tandem with ways of viewing and thinking, while the other is more specific and does not necessarily need to
be memorized. We assume that the latter is searched for and studied in the scientific understanding process when
required.

Formative evaluation of the developed gaming material revealed areas for improvement. However, we
should clarify whether it is the material or framework that requires refinement. To examine this issue, new
gaming material must be developed that considers the framework’s appropriateness and validity. In improving
the framework, the relationship between science and technology education should be considered. The time
explicitly allotted to technology education in Japan is very limited, with 87.5 and 70 hours designated to
technology in lower-secondary schools and information studies in upper-secondary schools respectively.
Moreover, as pointed out by Matsuda (2006; 2013), technology education in Japan does not emphasize the
design process defined in International Technology Education Association’s (ITEA) technology literacy
standards, but rather skills training. Additionally, science education in Japan is insufficiently connected to
technology education, and focuses on instilling domain-specific knowledge designed to help students pass
entrance examinations, not concepts that are useful in everyday life.

PURPOSE

The purpose of this study is to develop new instructional gaming material for scientific exploration
activities while improving and refining our design framework. In the new material, we intend to integrate
technology and science education, and prompt students to utilize technological and scientific ways of viewing
and thinking, in addition to problem-solving/analysis and hypothesis-testing methods. We chose a topic
concerning resources, energy, and environmental problems taught in technology education in lower-secondary
schools and related to chemistry content in upper-secondary schools.

DEVELOPMENT OF NEW INSTRUCTIONAL GAMING MATERIAL

In Japan, numerous instructional materials related to waste management issues have been developed,
including many games (Matsumoto et al. 2009). However, these materials have the following issues:
- Their target users are young children and as such, the gaming format was selected to raise learning
  motivation by allowing users to compete to achieve the fastest time or highest score.
- The purpose of these materials is to teach specific rules defined by a particular region, and then prompt
  users to separate many waste types into appropriate garbage bins.
- Scientific and technological explanations concerning each garbage type (such as their materials, physical/
  chemical features, or disposal methods) are not given.
- Insufficient feedback is provided when students make errors in separating garbage.

On the other hand, Japanese technology education textbooks include contents related to resources and
environmental problems. However, as Yamashita and Iwamoto (2002) note, technology classes tend to focus on
manufacturing activities, and inadequately address how to reduce garbage production or reuse and recycle
products. The present technology education is insufficient to cultivate students’ problem-solving abilities that
can follow change of values, appearance of new materials, change of cost, possibility of reuse/recycle of each
material, and so on, due to technological advancement.

Based on the above discussion, new gaming material was developed concerning how to create an adequate
word sculpture for a campus festival. Students are familiar with this topic, and should not only consider how to
manufacture a word sculpture, but also how to discard and reuse it. Their solutions will vary, and there is no
specifically correct answer. However, there is domain-specific knowledge and ways of viewing and thinking that
should be universally learned and utilized. Therefore, it is possible to evaluate the quality of students’ problem
solving activities.

Goal Setting Process

Based on our framework (Figure 1), the following goal setting process for this material was designed. First,
a student is assigned to a leader of the upper-secondary school exhibition decoration team, and familiarized with
the project’s mission. Then, according to the framework, he/she is expected to perform the first task: perceive
information in order to analyze the problem. The necessity of this task is apparent if they acquired the way of
viewing and thinking (i.e., considered varied information useful to solve a problem at any time). Moreover, a
viewpoint for perceiving information is obvious if the student pays attention to the way of viewing and thinking
(i.e., considers various benefits). If the individual possesses sufficient domain-specific knowledge about “various
benefits,” the burden of perceiving information can be reduced. On the other hand, if they assume that only the word sculpture’s attractiveness and cost are benefits, the issue of waste management will not be noticed. Therefore, the game must not mention waste management in this mission. Students should always perceive information positively to notice hidden issues and changes in states without depending solely on their prior or limited knowledge.

In addition to the above discussion, this study also pays attention to the differences between games and gaming. According to Matsuda (2012), instructional gaming materials prompt players “to learn through review after playing,” while educational games prompt players “to learn by playing.” As mentioned previously, Figure 1 was developed based on the information studies design framework, and Matsuda (2013) explained that the basic flow of information studies classes begins with an introductory exercise, followed by a lecture, and finally a retaining exercise. In an introductory exercise, students are expected to recognize the necessity of learning from failures. In a lecture, the knowledge and ways of viewing and thinking required to learn a problem are taught corresponding to failures in the introductory exercise. In the retaining exercise, students confirm whether they acquired knowledge and can utilize the ways of viewing and thinking learned in the lecture. Because information studies are a part of technology education, it is appropriate to apply such ideas even in this material.

According to the above idea, to provide students with opportunities to fail instructors should ensure that they do not teach too much. However, if students with insufficient knowledge are not given clues, they cannot attribute their failure to achieve specific goals to themselves, and consequently are not motivated to learn more. Therefore, it is imperative to embed clues into the information presented in various scenes. Moreover, it is necessary to prevent students from choosing correct answers by hurrying up to choose answers, exerting psychological pressure as other member's opposition, and so on. These principles for constructing choices and directions in gaming materials must be stated in the framework.

The first task in the goal setting process (perceive information in order to analyze the problem) is designed as follows. First, a senior student gives the student a manual containing the following information:

- Pictures of word sculptures from previous years’ campus festivals, as shown in Figure 2
- Lists of materials that should be purchased to make each word sculpture
- The location where the word sculpture will be installed (near the main gate), the size limit (about 1[m] × 1[m]), formation (letters that designate the school name), and so on
- There are two methods of assembling the word sculpture, as shown in Figure 3

Figure 2: A picture of a word sculpture constructed for a past campus festival.

Figure 3: Two assembly methods for the word sculpture.

The above Information suggests that the game requires students not only to primarily discuss the object’s shape, but also to select materials and methods, colors, and connections. While some students may consider
visual aspects to be most important, others may reflect on ease of assembly, durability, reduction in costs, and disposal of waste. It is important to provide students with opportunities to consider various benefits with minimum flexibility.

The game discussed herein was designed based on Matsuda’s (2015) idea that summarized the problem-solving process as a combination of warp process (goal setting → technical understanding ← rational judgment → derivation of an optimized solution → consensus building → review) and woof process (collect → process → summarize). At first, when students collect information, they should have a purpose and may choose a specific information source for any reason (hypotheses). Moreover, Matsuda (2015) stated that students should utilize a chart as in Figure 4 to identify various benefits and related information resources. This chart helps students formulate a problem by transforming it from various viewpoints and prompts them to utilize mathematical ways of viewing and thinking (i.e., specialization, analogy, deduction) and informatics and systematic ways of viewing and thinking (i.e., considering varied information useful in solving a problem at any time).

Therefore, students are required to explain their choice in the form of “purpose: x, reason: y, information source: z.” For purposes, we created a category related to goals (benefits), such as to make the word sculpture more easily or cheaply, as discussed previously. At the initial stage, some students have vague purposes, such as “To know about common word sculptures in the past,” “To know about the garbage that can possibly be collected,” and “To know about any past troubles.” Regarding choices for information resources, we not only prepared web sites, but also procured a teacher, a senior student, a garbage disposal dealer, a supplier of materials, and a directory of the campus festival. Moreover, for reasons (hypotheses) we prepared choices that were not necessarily adequate, but seemingly rational, such as “an easy way” and “likely to have the past data.” Because the choices contain both helpful and unhelpful information, students need to identify various benefits while understanding the messages and choices appropriately.

![Figure 4: An example chart to help students formulate problems by transforming.](image)

In the next task, students determined sub-goals and a work plan. To determine sub-goals, students were required to choose sub-goals from various benefits generated in the previous task. These sub-goals became viewpoints for generating alternatives, while the other benefits became viewpoints for verifying the rational judgment process. In parallel, students identified primary materials to construct and assemble the word sculpture. After that, students were required to devise a work plan, the order of viewpoints to generate alternatives, and a schedule. The latter emphasizes the necessity of adhering to a time limit in technological problem-solving. For this end, in our game a timer function is used to terminate a problem-solving activity and deem the task failed. Moreover, this game incorporates a collaborative situation wherein trouble might occur if students do not collect information about group members’ available dates. As choices for information to collect in this task, we included “group members’ schedules,” “dates necessary to obtain each material.” Choices for elements of the work plan included “make a list of shops selling each material before determining the work schedule,” “make a table assigning group members to each role,” and “make the schedule to purchase materials.” Based on these sub-goals and the work plan, students must generate alternatives in the next process.

**Generate Alternatives Process**

The name of this process was changed from “Scientific Understanding” to “Generate Alternatives” for the following reasons. First, there is a possibility that “Understand” will be confused with “Understanding the
problem” in the goal setting process. Second, because the problem-solving framework belongs to general strategies, we should emphasize the commonality of the problem-solving process within every subject area.

Regarding the change of the process name, we removed the phrases “Planning experiments or observations” and “Implementing experiments or observations” from Figure 1. This phrase corresponds with the scientific problem-solving procedure in the National Course of Studies guidebook. However, it is hard to expect students to carry out experiments and observations by purchasing an expensive experimental device in daily life. It is more important for them to utilize Information and Communication Technology (ICT) appropriately in order to collect information and raise the efficiency and quality of problem solving. Therefore, it is better to utilize ICT for finding data collected by another person than to conduct observations or experiments independently, while also considering the efficiency of the problem-solving activity. However, it is necessary to evaluate the reliability of utilizing the found data; students must then formulate a hypothesis, examine an experimental condition, and consider what kinds of data should be selected. To achieve this, students need to utilize scientific ways of viewing and thinking. If these examinations are conducted and no adequate data can be found, students ought to consider whether a new experiment/observation should be performed. We argue that students must perform “Exploration Activities” in science using not only informatics and systematics, but also scientific ways of viewing and thinking simultaneously.

As mentioned previously, when students began this process they knew the formation of the word sculpture and selected the primary materials and assembly methods. Additionally, students partake in the generate alternatives and rational judgment processes multiple times, while simultaneously generating alternatives and collecting information. Therefore, collecting information in its entirety at once to generate various alternatives is unnecessary. As for time restrictions, we assume that students will collect requisite information while choosing the positive alternative. Based on the above discussion, we developed the generate alternatives process as described below.

In the “Acquire/confirm scientific knowledge” task, students are required to acquire/confirm the following knowledge, although some should not be learned.

**[Knowledge concerning materials and coloring/connecting methods]**
- Materials: plastic bottles, steel cans, aluminum cans, newspapers, magazines, drink boxes, corrugated cartons, expanded polystyrene, wood, metal, and glass bottles.
- Coloring methods: watercolors, permanent markers, aqueous markers, colored tape, colored spray paint, and paint.
- Connecting methods: aqueous, rubber, epoxy, cyanoacrylic, polyvinyl, plastic, and hot bond/melt adhesives; packing, cellophane, and colored adhesive tape.

**[Knowledge of recycling methods]**
- Procedures and methods for recycling materials after they are used.

**[Knowledge of benefits that should be considered in choosing data collection and problem solving methods]**
- Websites containing useful data for examining several problems scientifically.
- Various beneficial points concerning problem-solving methods, the trade-off relationships among them, and ideas and viewpoints for conquering the trade-off relationship.

Therefore, in this task it is necessary to acquire knowledge concerning methods of finding useful websites and appropriately understanding and judging data.

For the next task, students are required to generate alternative combinations of materials and coloring/connection methods. Therefore, it is important to acquire knowledge concerning coloring and connecting methods for each material. Particularly, students must either focus on disposing of the garbage so that it is reusable or on reducing its amount as much as possible. To accomplish this, students should be given an opportunity to consider conditions for disposing of the garbage so that it is reusable. For example, in case of a plastic bottle if its vinyl label is peeled away following the drink’s consumption it can be recycled. However, if the plastic bottle contains a coloring agent or glue, it cannot be recycled until part of coloring agent and glue is removed. This is noteworthy in relation to the second assembly method in Figure 3, wherein extra materials are not attached to the plastic bottles. Moreover, even if the first method is selected some glue can be removed, assuming that students used an aqueous adhesive, although rain could possibly dissolve the adhesive if it is exposed to rain. Therefore, students should not only gather information concerning disposal methods, but also about connection and coloring methods. In this game, students are not required to remember the properties of materials or coloring and connection methods. The domain-specific knowledge that students should remember are core concepts that can be used for general purposes in the domain, such as important keywords to use when searching websites containing useful information related to coloring/connecting materials and waste disposal, while also utilizing knowledge concerning materials and recycling. Additionally, students should acquire knowledge to aid them in reading about and understanding and judging information appropriately.

Based on the above, information collection in this task focuses on conditions for disposing of garbage so that it can be reused and on the available coloring and connecting materials. Additionally, this task encourages students to use scientific ways of viewing and thinking, such as by planning an experiment focusing on the
examination of a specific hypothesis and considering whether the results that can confirm it. Therefore, both adequate and inadequate choices are provided, which might include identifying a material’s properties, searching for coloring and connection methods and their influences, or determining disposal methods for various materials.

In the task entitled “create alternatives to achieve the goal,” students are required to generate alternatives while simultaneously collecting information. As mentioned above, the main purpose of this gaming material is to decide upon materials and a coloring and connecting method. Therefore, initially this task guides students to choose primary materials and then a coloring and connecting method from the choices in Table 1.

Table 1: Choices for primary materials and coloring/connecting methods.

<table>
<thead>
<tr>
<th>Primary materials</th>
<th>Coloring method</th>
<th>Connection method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plastic bottle</td>
<td>Watercolor</td>
<td>· Aqueous adhesive</td>
</tr>
<tr>
<td>Glass bottle</td>
<td>· Permanent marker</td>
<td></td>
</tr>
<tr>
<td>Steel can</td>
<td>· Aqueous marker</td>
<td></td>
</tr>
<tr>
<td>Aluminum can</td>
<td>· Colored tape</td>
<td></td>
</tr>
<tr>
<td>Newspapers</td>
<td>· Colored spray paint</td>
<td></td>
</tr>
<tr>
<td>Magazines</td>
<td>· Paint</td>
<td></td>
</tr>
<tr>
<td>Drink box</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Corrugated carton</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Expanded polystyrene</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wood</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Metal</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Rational Judgment Process

Regarding this process, we removed the phrases “Planning experiments or observations” and “Implementing experiments or observations” from Figure 1. In this process, students should discuss the utilization of new technology and its social influences, risk evaluation, and trade-off relationships based on scientific reasoning. To perform risk and trade-off assessment, scientific problem solving should emphasize logical judgments based on the reliability and validity of data according to scientific evidence and theories. To encourage students to examine issues and their alternatives, a framework for rational judgment is provided (Figure 5, left side) based on Tamada and Matsuda’s (2004) framework for rational judgment in cyber ethics. This framework includes checkpoints that were not selected as sub-goals in the goal setting process (Figure 5, right side). When students use the framework on the left, they must arrange choices concerning various benefits that are provided on the right. Additionally, if students cannot conclude whether there is problem, they should search for information independently or ask an expert. Based on the above discussion the following rational judgment process was developed.

Figure 5: The rational judgment framework.
In the task entitled “consider the negative influence caused by scientific use” students begin by examining issues related to alternatives they generated. As mentioned previously, it is here that students are prompted to identify issues of alternatives they generated according to the above framework using informatics and systematic ways of viewing and thinking. This includes considering the trade-off relationship between various benefits, determining which benefits should be changed according to situations and decision-makers, and quantitatively estimating the results of an experiment using hypothetical functions. If students identify issues related to alternatives they generated, they are prompted to consider sub-goals for improving the alternative using scientific ways of viewing and thinking (e.g., considering a special case wherein one of the factors is ignored/added or methods for changing specific factors in the experimental conditions). Students are then required to return to the generate alternatives process and reconsider alternatives in a task wherein further alternatives are generated to minimize faults found in the rational judgment process.

Derivation of an Optimized Solution Process

In the derivation of an optimized solution process, students choose an optimal solution from among all possible alternatives using informatics and systematic ways of viewing and thinking (i.e., choosing a solution based on an evaluation of the benefits). Alternatives to choose in this task include “the word sculpture’s assembly method,” “primary materials,” and “coloring and connection methods.” Students must then explain the reasoning behind their choices by associating with benefits they chose.

Review Process

During the review process a student’s conclusion is contrasted with the prepared example answer. The student is then prompted to use scientific ways of viewing and thinking (i.e., examine whether the results can be reproduced) to discuss the differences between both conclusions and describe their opinion. Finally, he/she is prompted to reconstruct domain-specific knowledge through self-evaluation activities and by answering a post-task questionnaire.

IMPROVEMENT OF THE DESIGN FRAMEWORK AND FUTURE DIRECTIONS

Based on the above discussion, the design framework presented in Figure 1 should be improved and refined. The points for improvement and refinement are shown in Tables 2 and 3. Furthermore, it is necessary to reconsider the appropriate task for utilizing each way of viewing and thinking, as well as changing the phrase of scientific ways of viewing and thinking related to perform experiments and observation. Although we improved and refined our design framework while developing new gaming material, trial lessons should be performed using this material to confirm its educational effect and to examine the appropriateness and flexibility of the design framework.

Table 2: Points that should be added to Figure 1 for students.

<table>
<thead>
<tr>
<th>Process</th>
<th>Task name</th>
<th>Points for improvement and refinement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Goal setting</td>
<td>Perceive information</td>
<td>-Utilize a chart like Figure 4 to find various benefits and related information resources.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-Utilize mathematical ways of viewing and thinking, such as specialization, analogy, and deduction, in addition to considering different information to solve a problem.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-Perceive information positively to identify hidden issues and changes in states without depending on old-fashioned or limited knowledge.</td>
</tr>
<tr>
<td>Determine sub-goals</td>
<td>Choose sub-goals from among various benefits. These sub-goals become viewpoints for generating alternatives, while other benefits become viewpoints for verification during the rational judgment process.</td>
<td></td>
</tr>
<tr>
<td>Determine a work plan</td>
<td>-Determine a work plan and organize viewpoints to generate alternatives and a schedule.</td>
<td></td>
</tr>
<tr>
<td>Generate alternatives</td>
<td>Create alternatives to achieve goals</td>
<td>-It is unnecessary to collect all information at once to generate every alternative.</td>
</tr>
<tr>
<td>Rational judgment</td>
<td>Consider negative influences caused by technological use</td>
<td>-Examine issues of alternatives using the framework for rational judgment, as in Figure 5.</td>
</tr>
<tr>
<td>Process</td>
<td>Task</td>
<td>Points for improvement and refinement</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>-------------------------------</td>
<td>--------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Goal setting</td>
<td>Perceive information</td>
<td>Embed clues into information presented in various scenes; prevent students from choosing correct answers by hurrying up to choose answers, exerting psychological pressure as other member's opposition, and so on.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>When students collect information their purposes vary and they may choose a specific information resource for any reason (hypotheses). Therefore, students should be prompted to explain their choices in the form of “purpose: x, reason: y, information source: z.”</td>
</tr>
<tr>
<td>Determine a work plan</td>
<td>The task emphasizes necessity of adhering to a time limit in technological problem solving.</td>
<td></td>
</tr>
<tr>
<td>Generate alternatives</td>
<td>Acquire/confirm technological knowledge</td>
<td>Students must acquire/confirm knowledge, although some of this knowledge should not be learned. The domain-specific knowledge that students should remember are core concepts that can be used for general purposes, such as important keywords to search websites containing useful data. Additionally, students must acquire knowledge about reading, and understand and judge that information appropriately.</td>
</tr>
<tr>
<td>Derivation of an optimized solution</td>
<td>Choose an optimal solution from among all possible alternatives</td>
<td>Students should be prompted to explain the reason for conclusions by associating with benefits their chose.</td>
</tr>
<tr>
<td>Review</td>
<td>Self-evaluate problem-solving activities based on the log</td>
<td>Students must be prompted to discuss the difference between an example answer and their conclusion, and also describe their opinion.</td>
</tr>
</tbody>
</table>

**ACKNOWLEDGMENTS**

This research was supported by JSPS KAKENHI grant numbers 26350313 and the foundation for the Fusion of Science and Technology.

**REFERENCES**


Context-dependent learning in virtual worlds: The effects of prior experience, cognitive style and environmental cues on recognition

Abstract: This empirical study investigated the impact of environmental cues and individual differences on performance outcomes in a 3D virtual environment learning task. The task was comprised of a learning phase and test phase. In the learning phase, participants were asked to move through a 3D environment as an avatar and to read posted information along a prescribed path. In the test phase, participants moved along the path again and answered multiple choice questions relevant to the posted information. In half the questions, the landmarks and environmental cues were identical to those presented with the material in the learning phase (matched), in the other half the cues were mismatched from the learning phase. Pre-measures were taken of cognitive style and prior computer experience. The results revealed that the students recognized significantly more material from the learning phase when tested on the matched cue items. Students that tested as Field-independent completed the task in less time than those categorized as Field-dependent. Also, students that had more skill-based computer experience performed better on the mismatched items than those who had other types of prior computer experience.

3D Virtual Learning Environments

Virtual environments (VEs) are interactive, on-line, 3D spaces where learners interact with the environment and other learners via manipulatable avatars. For the purposes of this study, VEs are defined as 3D online environments having the characteristics of: a) a shared and persistent 3D environment, b) individuals represented as avatars within that environment, and c) interactions, both with the environment and other avatars, occurring in real-time.

VEs have the potential to provide instruction that is self-directed and that encompasses the attributes that educational research has determined increase student motivation such as choice, challenge, control and collaboration (Gao, Noh, & Koehler, 2009). The additional dimension of immersiveness is related to increased capture and maintenance of attention (Cho et al., 2002; Hoffman, 2004) and increased motivation (Yee, 2006). Skill transfer from VEs to real-world situations have been documented for both spatial skills and procedural skills (Waller, Hunt & Knapp, 1997; Rose et al., 2000). Overall, three dimensional VEs have been perceived as beneficial to learning by educators in distance learning, K-12 contexts, for critical thinking, problem-solving, creativity and project-based experiential learning (see Nussli & Oh, 2014, for review). VEs have also been perceived as enhancing students’ sense of responsibility for their own learning, student independence, and empowerment (Good et al., 2008).

Virtual learning environments are visually complex spaces that include multiple forms of information. However, it is premature to assume that learning processes and interactions are comparable to those we observe in real-world learning spaces where learners are physically within the environment. In this study, we are testing several elements of learning spaces that can impact learning to determine if these effects may exist in VLEs as well.

Context-dependent learning

In the VLE literature, spatial immersion has been promoted as a particularly valuable ‘affordance’, that is, an attribute of the environment that is likely to induce or support action (Gibson, 1986). Of the five VLE affordances described by Dalgarno and Lee (2010), three of
them refer to the attribute of spatial immersion. VLEs can be used to facilitate learning tasks: 1) that lead to improved transfer of knowledge and skills to real situations through contextualisation of learning, 2) that lead to the development of enhanced spatial knowledge representation of the explored domain, and 3) that are experiential and represent tasks that are rare, impractical or impossible to undertake in the real world.

The contextualization of learning is empirically supported in the psychological literature in real-world tasks. Research has shown that spatial and contextual attributes play an associative role in learning, referred to as context-dependent memory (for review, see Smith & Vela, 2000). Actions, events or information in the environment are cognitively paired to spatial locations and those locations can help or hinder the recall of information depending on their characteristics (e.g., Radvansky, 2012). In our previous research, incidental or unintentional learning occurred in VLEs in response to minor adjustments in the visual salience of information (e.g., bolded text) (Thomas & Boechler, 2014) which suggests the need to empirically determine the impact of a variety of contextual attributes.

**Individual Differences**

**Cognitive Style**

As technologies have been integrated into educational practice, interest has re-emerged on the issue of learning or cognitive styles in the hope that they may inform the optimal use of educational technologies for different learners. In a well-known cognitive style measure, Witkins and Goodenough (1977) characterized learners as Field-dependent (FD) or field-independent (FI). FD learners are more likely to be socially oriented, more empathic, likely to need more external reinforcement and externally derived objectives to grasp new material. FI learners tend to be more individualistic, able to grasp more abstract concepts and tend to be internally motivated. Bertini (1986) describes several studies that have linked the FD/FI characterization to other learner differences such as the effects of reinforcement, cue salience, educational-vocational choices and the use of mediators in learning. In regards to learning with and about digital material and applications, Parkinson and Redmond (2005), found that field-independent learners performed significantly better than field-dependent learners in web-based and computerized text-based environments. Ford and Chen (2000) found that FD/FI cognitive styles were related to the navigation strategies that users relied on during hypermedia navigation.

**Prior Computer Experience**

Currently, the literature on prior computer experience, skills or knowledge contains multiple definitions and means of measuring “literacy” or “competence”. The terms digital literacy, digital competence, e-literacy, information literacy and computer literacy have all been used to describe an individual’s prior level of familiarity with computers or digital applications and materials (Beetham,(2010). Martin (2009) describes e-literacy as “awareness, skills, understanding and reflective evaluative approaches to operate in an information rich and IT supported environment” (p. 97). Whereas, Ranieri, Calvani and Fini (2010) would define digital competence as “the capability to explore and face new technological situations in a flexible way, to analyze, select and critically evaluate data and information, to exploit technological potentials in order to represent and solve problems and build shared and collaborative knowledge” (pg.542). In this study, we employed a unique measure of digital literacy which we refer to as the Computer Experience Questionnaire.
The research questions in this study were:

1) Do environmental cues at learning and test phases affect recognition of previously presented material?

2) Does Cognitive Style, as measured by the Group Embedded Figures Test (GEFT), predict performance in a virtual world learning task?

3) Does prior computer experience predict performance in a virtual world learning task? If so, what type of experience?

Methods

The data collection occurred as part of a larger project on multi-tasking in virtual worlds. For our study, participants completed a series of pre-measures before completing a virtual world learning task. Seventy-seven first year Education students completed pre-measures on prior computer experience and cognitive style followed by a virtual world learning task. Due to issues during data collection, nine individual’s datasets were removed, leaving a sample of sixty-eight participants.

Cognitive Style was measured using the shortened version of the Group Embedded Figures Test (GEFT) (Witkins, 1973). The test characterizes participants as Field–Dependent or Field-Independent. Scores were determined by the total number of simple forms correctly traced in the Second and Third sections combined in the pencil-and-paper booklet. Any omitted items or incorrect responses were scored as incorrect.

The Computer Experience Questionnaire measures three areas of prior experience: a) general exposure to digital materials and applications, b) video gaming and social media experiences, and c) experience with educational digital activities. The Software Recognition Test (SRT) measures general exposure to digital tools and materials. The test includes word-processing software, mathematical, statistical and database software and video games. It consists of twenty actual software titles and twenty foils. Scores are recorded as right minus wrong, where each is incorrectly identified foil is subtracted from the total number of correctly identified software titles. In our own previous work, we found the SRT to predict learning from a website better than other specific computer experience (e.g., educational vs. recreational computer activities) (Boechler, Leenaars & Levner, 2008) as well as performance on a video game building task (Boechler, Dragon, Wasniewski, 2014). The Recreational Experience Scale (RES) measures the duration and intensity of experience with applications such as video gaming and social-media platforms. Each area consists of Likert-scale questions on a scale of 1 to 5 (1 being "Not At All" and 5 being "greater than 10 hours") over four main time ranges: Elementary School age, Junior High School, High School, and Recent use. Given previous analyses which indicated time was not a factor, the computer experience scores for each category (e.g. Social Networking) were cumulated across these time periods for a total of 20 per category. Finally, the Educational Activities Checklist (EAC) is a self-report measure of skill achievement in non-recreational activities (e.g., using a formula in a spreadsheet).

Procedure
After completing the pre-measures, participants controlled a human avatar in the OpenSim environment designed to resemble a large park with distinct, natural landmarks and pathways. They were given instructions to follow a guided pathway within the virtual world and read all the textual content displayed on-screen such as any billboards and then respond when prompted at any point during navigation. Spaced evenly along the marked pathway were billboard signs with a short paragraph of content (historical information about London's Underground Transit System) for participants to read.

There were two trials within the virtual world: the learning phase in which participants read and processed information, and a testing phase with twelve multiple choice questions. Both trials take place in the same environment, but the unique landmarks are randomly generated in the second trial to either stay in the same location or switch to a new location. These changes are randomly assigned to each individual but deliberately matched or mismatched (6 mismatched and 6 matched questions) with the previous learning location. Therefore, the test phase determined whether the presence or placement of nearby environmental elements, such as a distinctive collection of landmarks, impacted a learner’s ability to recognize information from learning phase. While in the virtual environment, the system automatically recorded the time taken for each participant to complete the entire virtual task.

Results

Table 1.

Descriptive Statistics for all independent and dependent variables

<table>
<thead>
<tr>
<th>Variables with maximum possible score</th>
<th>N</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Mean</th>
<th>Std Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Independent Variables</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Educational Activities (13)</td>
<td>69</td>
<td>3.0</td>
<td>13.0</td>
<td>8.33</td>
<td>1.88</td>
</tr>
<tr>
<td>Software Recognition (20)</td>
<td>69</td>
<td>5.0</td>
<td>17.0</td>
<td>11.48</td>
<td>2.28</td>
</tr>
<tr>
<td>Video Gaming (20)</td>
<td>66</td>
<td>4.0</td>
<td>18.0</td>
<td>7.10</td>
<td>3.71</td>
</tr>
<tr>
<td>GEFT (8)</td>
<td>66</td>
<td>1.0</td>
<td>8.0</td>
<td>5.32</td>
<td>2.07</td>
</tr>
<tr>
<td><strong>Dependent Variables</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overall Time (min/sec)</td>
<td>68</td>
<td>3:00</td>
<td>16:00</td>
<td>5:45</td>
<td>2.54</td>
</tr>
<tr>
<td>Overall MC Score (12)</td>
<td>68</td>
<td>1.0</td>
<td>11.0</td>
<td>6.75</td>
<td>2.21</td>
</tr>
<tr>
<td>MCTest (Matched)</td>
<td>68</td>
<td>0</td>
<td>5.0</td>
<td>3.65</td>
<td>1.16</td>
</tr>
<tr>
<td>MCTest (Mismatched)</td>
<td>68</td>
<td>0</td>
<td>6.0</td>
<td>3.10</td>
<td>1.55</td>
</tr>
</tbody>
</table>

Research Question #1:

1) Do environmental cues at learning and test phases affect recognition of previously presented material?
A paired samples t-test was conducted on the matched MC Scores vs. the Mismatched MC Scores (see Table 2). The analysis indicated that the matched items were answered correctly significantly more frequently than the mismatched items, suggesting that the repetition of the learning phase setting during the test phase assisted in participant’s recognition of the material.

Table 2

<table>
<thead>
<tr>
<th>Paired-Sample t Test for Multiple Choice Scores</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Multiple Choice</td>
</tr>
</tbody>
</table>

Note. *P-value is significant at the 0.05 level (2-tailed)

Research Question #2 and #3:

In order to address the second and third research questions, we conducted a series of simple and multiple regressions to reveal relationships between task outcomes and cognitive style or prior computer experience. The correlations between all regression variables are presented in Table 3.

Table 3. Correlations for all predictor variables (n = 66)

<table>
<thead>
<tr>
<th></th>
<th>Educational Activities</th>
<th>Software Recognition</th>
<th>Video Gaming</th>
<th>GEFT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Educational Activities</td>
<td>1.00</td>
<td>.387**</td>
<td>.175</td>
<td>.095</td>
</tr>
<tr>
<td>Software Recognition</td>
<td>.387**</td>
<td>1.00</td>
<td>.252*</td>
<td>.248*</td>
</tr>
<tr>
<td>Video Gaming</td>
<td>.175</td>
<td>.252*</td>
<td>1.00</td>
<td>-.010</td>
</tr>
<tr>
<td>GEFT</td>
<td>.095</td>
<td>.248*</td>
<td>-.010</td>
<td>1.00</td>
</tr>
</tbody>
</table>

Note. *P-value is significant at the 0.05 level (2-tailed)
**P-value is significant at the 0.01 level (2-tailed)

Regression Analyses
2) Does Cognitive Style, as measured by the GEFT, predict performance in a virtual world learning task?

In Witkin and Goodenough’s (1977, 1981) research with smaller groups, cognitive style groupings are determined by a median split with scores below the median interpreted as being field-dependent, and those with scores above the median treated as field-independent. The median score in this study was 6. Therefore, participants scoring below 6 on the GEFT were categorized as having a field-dependent cognitive learning style.

A simple regression was conducted on cognitive style as a categorical variable and each of the dependent variables. The results showed that cognitive style, characterized as field-dependence or field independence, was significantly related to the overall time it took participants to complete the entire task. Participants who tested as field independent were faster at completing the task.

Table 4. Results of Simple Regression Analysis of GEFT on each of the dependent variables

<table>
<thead>
<tr>
<th>Cognitive Style (GEFT) as Predictor</th>
<th>$R^2$</th>
<th>Adj $R^2$</th>
<th>$F$</th>
<th>$p$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall Time</td>
<td>.069</td>
<td>.054</td>
<td>4.723</td>
<td>.033*</td>
</tr>
<tr>
<td>Overall MC Score</td>
<td>.044</td>
<td>.029</td>
<td>2.974</td>
<td>.089</td>
</tr>
<tr>
<td>Matched MC Score</td>
<td>.039</td>
<td>.024</td>
<td>2.575</td>
<td>.114</td>
</tr>
<tr>
<td>Mismatched MC Score</td>
<td>.024</td>
<td>.009</td>
<td>1.560</td>
<td>.216</td>
</tr>
</tbody>
</table>

*P-value is significant at the 0.05 level

3) Does prior computer experience predict performance in a virtual world learning task? If so, what type of experience?

To assess if the prior experience variables (SRT, REC and EAC scores) functioned as predictors of recognition of the multiple choice material and time on task outcomes, a multiple regression analysis was conducted on each of four dependent variables: a) Overall Time on task, b) Overall multiple choice score, c) Matched multiple choice score, and d) Mismatched multiple choice score. Two participants’ data was incomplete on three measures which reduced the full dataset to $n=66$. For the dependent variables, evaluation of residuals revealed no outliers in the data. First, a regression model including SRT, EAC and Video Game experiences as predictors was executed for each dependent variable.

**Overall Time on Task:** The regression model did not significantly predict the relationship between the time on task and the computer experience variables. ($R^2 = .062$, Adj $R^2 = .016$, $F(3,62) = $, $p = .263$).

**Overall Multiple Choice Score:** The regression model did not significantly predict the relationship between the overall multiple choice Score and the computer experience variables. ($R^2 = .062$, Adj $R^2 = .016$, $F(3,62) = $, $p = .263$).
**Matched Multiple Choice Score:** The regression model did not significantly predict the relationship between the matched multiple choice scores and the computer experience variables. \((R^2 =.062\), Adj \(R^2 = .016\), \(F(3,62)=, p=.263\)).

**Mismatched Multiple Choice Score:** Although the EAC scores contributed the most toward predicting the outcome \((p = .039)\) the regression model did not significantly predict the relationship between the mismatched multiple choice scores and the computer experience variables. \((R^2 =.062\), Adj \(R^2 = .016\), \(F(3,62)=, p=.263\)).

As the SRT scores were significantly correlated with the other experience variables, we conducted a series of regression analyses with subsets of the variables and also a simple regression with each individual experience variable on each of the dependent variables. Only the regression model with EAC as the single predictor showed a significant relationship to the mismatched multiple choice scores. **The higher the score on the EAC, the higher the score on the mismatched items** \((R^2 = .087\), Adj \(R^2 = .073\), \(F(1,64)= 6.117, p=.016\)).

An issue with the tested full models may be reduced power for detecting an effect. Posthoc power analyses indicated that, due to our loss of ten participants’ datasets, power levels were not high enough (.80 and above) to detect an effect with three predictor variables.

**Discussion and Conclusion**

This study revealed an effect of context (environmental cues) on learning in a 3D virtual environment. During a test phase, students were more able to recognize previously presented material when it appeared within the same virtual scene (proximal and distal landmarks) as during the learning phase.

In regard to the relationship between cognitive style and virtual environment task outcomes, FI learners executed the task faster than FD learners but there was no difference in the recognition of previously presented material. The relationship of virtual environment task outcomes to prior computer experience was not as clear. In the multiple regression models, no multiple predictor models were significant, indicating that no linear combination of independent variables explained the variance well in each of the dependent variables. The only model that indicated a significant relationship between prior computer experience and outcome variables was a simple regression model between educational activities checklist scores and the scores on the mismatched multiple choice items.

Counterintuitively, video game experience, that is, experience in navigating through and executing tasks in 3D virtual environments, did not predict students’ abilities to recognize the previously presented material in matched or mismatched contexts. Nor, surprisingly, was it related to the time it took students to move through the virtual world and execute the tasks.

The lack of significant findings in the multiple predictor models may have been due to the fact that the final sample size was below that recommended to achieve .80 power on the analysis \((n=66, \text{versus } n=76)\). Consequently, further study is needed with a larger sample size.

Regarding learner differences, the definition and measurement of prior computer experience has not reached a consensus in the educational technology literature. Prior experience, knowledge or skills are diversely referred to as digital literacy, digital competence etc. are still debated in the literature and reliable means of measurement are still being developed. It is not clear the exact nature of relevant underlying knowledge or skills and their relationships to performance on diverse digitally-based tasks.

Regarding the impact of the virtual environment on learning, our results support the notion that context-dependent memory plays a role in virtual learning as it does in real-world
learning. However, the manipulation of the environment in this study represents only one possible type of environmental change with a specific age group of learners. Further studies are needed to determine if this effect generalizes to other aspects of VLEs and to learners with different attributes than those tested here.

References


Young Children's Risk Management in Tarzan Swing: An Investigation Using a Self-Regulated Learning Framework

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Abstract

In order to reduce the number of accidents and injuries among children, Japanese kindergartens and nurseries are focusing on risk management. Because this generally leads to a greater degree of caution among teachers and administrators, children have fewer and fewer opportunities to engage in play that includes some element of risk. However, we think that if the risk management of children are at a sufficiently high level, then children would be able to take part in more challenging activities safely.

For this research, we interviewed five- and six-year-old children in order to investigate the risk management in the context of a Tarzan swing. A Tarzan swing is a swing constructed by hanging a long piece of rope from the branch of a tall tree and then tying a short stick to the end. The children sit upon this stick and swing back and forth on the rope.

We used self-regulated learning as a framework for our investigation. Self-regulated learning consists of three phases: forethought, performance, and self-reflection. To evaluate the effectiveness of self-regulated learning as a risk management, we asked children various questions, such as "Why did you want to try Tarzan swing that made you feel fear?" and "Can you tell me how you ride the Tarzan swing?" The participants were 25 kindergarten children aged between five and six years old (14 boys and 11 girls). They were children who normally play with the Tarzan swing.

The results (discussed here with respect to the three phases of self-regulated learning) were as follows.

**Forethought phase:** Answers relating to this phase involved the goal setting by the children (for example, closing their eyes and waving one hand while using the swing, or standing up on the swing, were typical goals). There were also descriptions of self-motivation (for example, "it looked like fun," "I thought I'd try it," or "I thought I could do it").

**Performance phase:** Answers related to this phase frequently brought up the idea of overcoming fear. Many children said, "I was brave." When they asked their task strategies, the children often mentioned their own individual method of riding the Tarzan swing: the place where they hold the rope, the place where they get off the swing, etc.

**Self-reflection phase:** Answers related to this phase included the following comment: "When the stick turned 90 degrees, I thought it was dangerous."

Based on the above results, it is reasonable to say that even five- and six-year-old children have, to some extent, the ability to follow the three phases of self-regulated learning. If so, then their risk management ability is higher than previously believed. Therefore, they are unlikely to injure themselves, even if they do participate in play that incorporates some risk. Children using self-regulated learning to manage risk are potentially able to take part in a greater and more challenging variety of play experiences. This, in turn, would allow children to increase their abilities in various fields.
Hawaiian International Conference on Education

January 5-8 2015

Submission ID 1125

Solution Based Decisions in Education Organizations

Anissa McNeil, PhD

Robert Hernandez

Argosy University
Introduction to Education Decisions

Countless decisions are made by educators in delivering quality service to students. This paper will focus on strategic decisions and the processes used for the decision taking. Strategic decisions are those which impact many students such as setting the direction for a school district. Often strategic change is a response to new Federal or State requirements to receive full funding. Considering the time required to establish new regulations and laws, one may believe implementation plans are developed between the Federal and State officials to ensure smooth implementation to maximize the educational benefits for the students. Sadly, this is not the case. According to Brazer, Rich and Ross (2010), implementation guidance is not included with new guidance requiring States to develop their own standards, benchmarks, and implementation plans.

The quality of education improvement decisions significantly impacts the students. As such, one may believe all members of the school board and school superintendent are focused on working cooperatively to make the best possible decisions to balance student benefit with regulatory and budget realities. Unfortunately, Thompson (2014), discovered increased stress due to high expectations in achieving educational reforms can erode the relationship between superintendents and board members to the point of open bickering and continual opposition. Considering the importance of decisions impacting a large number of students and thus the high interest of parents, tax payers, and other stakeholders; conflict is understandable and expected. With the high importance of making decisions to deliver high value to students and stakeholders, participative interaction with the stakeholders throughout the entire decision and implementation process would be beneficial. Surprisingly, this is rarely what is done. According to Brazer et al.
(2010), collaborative processes effectively end once the decision is made resulting in little collaboration during implementation planning and execution phases of a project.

**Introduction to Business Solution Based Decision Making**

**Problem**

Implementing new education processes or standards while balancing the desires of stakeholders creates special challenges. Problems arise when the costs and benefits are not fully considered. High cost decisions with unclear benefits create targets of opportunity to criticize the change or to call into question the decision processes. According to the Chair’s Report on The Common Core Technology Project Ad Hoc Committee, the annual software costs negotiated by the Los Angeles Unified School District (LAUSD) will be higher than the previous costs of textbooks although cost savings was a requirement and often advertised benefit of the technology improvement plan. An additional advertised benefit which stakeholders desired was a reduction of student backpack weight, yet the electronic curriculum was not replacing textbooks so the new electron device was in addition to the books so backpack weight was increased.

As the education authority for the district or local school region, there are few checks and balances to ensure accountability of decisions and actions of the school board and superintendent. If the superintendent and school board do not establish participative processes with open communication, there will be few opportunities to receive feedback or make corrections. Citizen oversight boards can be a source of feedback or checks and balances. However, the community members selected to oversight boards often lack experience with major acquisition or improvement projects. The result is a lack of input to decision takers until it is too late and the implementation has gone horribly wrong or after terrible performance has been realized. Too often the community input is then one of outrage or allegations of abuse of power.
What can we learn?

From examining the technology improvement programs at several school districts, including LAUSD, we can learn where shortfalls in the decision and planning processes resulted in inevitable problems with program execution and continuation. Surely, some of the perceived issues were due to perceptions and level of stakeholder understanding. As a minimum we can learn the importance for superintendents and school boards to clearly communicate with all stakeholders to ensure reasonably achievable expectations are established. Likewise, stakeholder expectations should be incorporated into the decision and execution planning.

Applying technology improvements across several schools to meet the needs of the students at different levels and the expectations of stakeholders with often strict budgetary constraints is a nearly impossible challenge faced by school leadership. Without a disciplined solutions oriented process supporting the decision process, key requirements can be overlooked while less important or nice to have capabilities are captured. A critical requirement for the technology improvement of the Los Angeles Unified School District (LAUSD) was meeting the new Common Core standards. The effort was even titled the Common Core Technology Project (CCTP) by LAUSD. However, the iPad solution selected by LAUSD did not meet the requirements set by the Smarter Balanced Assessment Consortium (Smarter Balanced, 2014).

Using a solutions oriented process will help identify all requirements to achieve the desired solution. The LAUSD technology program was marred with problems as students and teachers were unable to access the internet and necessary programs were slow to start or frequently crashed (Blume and Ceasar, 2013). Additionally, security issues surfaced almost immediately as students were able to bypass controls. School policies were not updated before
computers were issued to students, guidelines for teachers and principals were not established, and, parental responsibility for the devices was not clearly communicated (Ratliff, 2014).

Another aspect of using solutions focused decision processes is the incorporation of the lifecycle impacts into the decision process. Often the decision takers are focused on the initial purchase and do not capture the issues regarding use and program sustainment requirements. In his article Barshay (2014) illustrates the issues of use and sustainment faced by the Hoboken junior-senior high school resulting in the decision to end the computer for every student program and dispose of the computers. The windfall of economic stimulus funding led to the purchase of computers but the implementation of the program faced multiple problems including insufficient teacher training on using the technology in the classroom. Faced with the high cost of sustaining the program and questionable results, Hoboken is ending the program and will send the computers to recycling.

Business Solutions for Education Decisions

The idea of applying business processes to a school is outrageous to some. In a recent interview Alex Caputo-Pearl, the head of United Teachers Los Angeles, made clear his objections to aspects of LAUSD’s recent “run-schools-like-a-business” approach (Morrison, 2014). Although K-12 schools do not generate profit, they do generate a product. This product is providing educational value for the customers, the students and parents. Therefore, applying business processes such as solution based decision making to prioritize funds allocation with the goal of maximizing the educational value provided fits well with established business oriented decision processes. However, application of solution oriented decision processes needs to be applied across the full spectrum of decisions and with full and open disclosure of details and intended results to achieve maximum results.
Before starting a solution based process, one must first understand the problem with a delineation between requirements or needs versus desires or nice to have items. Additionally, understanding the objective of the improvement project is necessary to determine how well specific capabilities align to the objective and thus determines how well a capability solves the problem. This understanding is critical for maximum success. While working through various solutions to an issue and weighing attributes, the objectives may change as the understanding of alternatives increases. Therefore, clearly defining specific objectives is important to ensure they are addressed in the decision process.

One of the most common decision tools is the utility scale model, also known as a Grid Analysis, Matrix Analysis, and Multi-Attribute Utility Theory (Mindtools, 2014). Many of us complete the process in our personal lives when shopping and comparing different items from small purchases such as an article of clothing to major purchases such as appliances or an automobile. When multiple alternatives and features are being considered, or when documentation of the decision process is required to support briefings to stakeholders and historical records; drawing a scale or matrix of the alternatives can be beneficial. Developing a grid of alternatives and assigning numerical values to the different aspects being considered can help you make the best decision by helping to identify and separate needs versus desires.

While the typical model only assigns values to the characteristics of the item under consideration, according to Weiss, Weiss, and Edwards (2006), value can also be assigned based on the solutions alignment with events occurring at the moment. Although this may seem illogical, it helps to explain why some may make decisions which seem based on impulse or counter to their long standing course of action. Changing events cause changes in value of the different alternatives. Therefore, the relative ratings of the alternatives can change as events
unfold or guidance is clarified. Often the change of an alternative’s importance will be driven by emerging stakeholder requirements. The changing value in response to events is subjective and provides an opportunity to insert undue personal bias toward a desired solution. This is mitigated by using cooperative processes with full disclosure and rating justification.

In completing the solution based decision process it may be necessary to complete and adjust the matrix several times. The first time will be to capture the baseline or minimum capabilities and existing solutions. In this initial process, the need to complete a new acquisition or reform will be determined. New education guidelines may only require procedure or policy changes. An example could be the need to complete Common Core or standardized testing as the new guidance, completing the matrix may prove the requirement can be met by shifting student schedules to avoid overwhelming current library or computer lab capabilities. After determining the need of a new acquisition, the matrix should be reviewed to ensure any new procurement requirements are incorporated.

To build the matrix, options or solution alternatives should be listed as row labels. The number of solutions and their capabilities may not be known until proposals are received. Each capability for evaluation should be listed across the columns of the matrix. The list of capabilities can be extensive. In some cases it may be possible to limit the columns to overarching capabilities without small detail or to list minimum required compliance standards as well as key desired capabilities. For example, the common minimum for a computer random access memory (RAM) is 2 gigabyte (GB). However, 4GB of RAM helps speed processes so memory of 4 GB could be a desired capability. Once the matrix is built, the rating of how well each solution meets the capability is determined. A scale of 0 (poor) to 5 (very good) is often
used to complete the ratings. One may find some capabilities are fully met by every alternative and other capabilities are only partially met with no fully compliant alternatives available.

The next step is to assign relative importance or weighting to the capabilities. Critical needs and statutory compliance items will have a greater importance than desired items. Returning to the computer memory example; more than 4GM RAM provides no realized benefit for K-12 students. Therefore, the 4 GB RAM alternatives will have a greater weighting than the 2 GB alternatives, while the 6 or 8 GB solutions will have the same weighting as the 4 GB. After the relative importance of the capabilities is determined, multiply this weighting by capability score and sum the totals for each alternative.

To reach the best possible outcome in the decision taking, personal bias and predetermined solutions must be put aside to ensure all available solutions are fully evaluated. For example, with primary stakeholder requirements of reduced the weight of backpacks carried by children and lower costs the solution may be to retina old textbooks for use as a home set or a new technology project. After the decision to procure technology for electronic textbooks, the utility matrix should be updated to include use and sustainment requirements. There are numerous devices available which can be used to read electronic books. However, the key issue of lowering cost must be considered both initially and across the lifecycle. Ignoring the full time duration of use may skew the information and hide critical data necessary for the best decision. Therefore, a period of sustainment past the initial purchase useful life is required. Current textbooks are used for up to 7 years with a cost of about $60 (Computinged, 2013). This results in an average annual cost of about $10 per book through the lifecycle.

Too frequently the focus of education decision takers is on other aspects of the decision instead of the education value provided to the students. Normalizing the cost of a $400 to $600
table for electronic books makes the cost saving goal impossible to obtain. However, lower cost readers are available, but often overlooked as solutions. These other alternatives include devices such as the Kindle and Nook readers. License duration of electronic books creates additional challenges as some negotiated durations are only one year instead of the standard provided to individual consumers or the average useful life of a printed text. Longer license periods make the switch to electronic textbooks more cost effective. Adding additional requirements such as browsing and word processing results in greater value and creates a higher targeted price point to meet shareholder requirements. The level of increased capability and cost must be balanced against the possible education value of the product to determine a solutions decision score.

Building a matrix to complete utility analysis of alternatives provides for the quantitative analysis of critical compliance requirements and capabilities. Building and reviewing of the matrix helps ensure critical requirements are not overlooked in the decision process. Additionally, it provides a means to include and qualitatively measure capabilities which may not be critical requirements, but are highly desired by stakeholders. Listing the capabilities and weighing provides visibility into the decision and helps to avoid individual personal biases toward an item which does not support the educational value mission goal. Documentation and visibility into the decision can be used for historical documentation as well as to gain support from stakeholders and improves confidence in the decision.

**Challenges to Implementing Solution Based Decisions**

The largest challenge to implementing a solution based decision is not the actual acquisition process. Although very complicated and requiring significant effort and time, acquisition processes are well defined and driven primarily by Federal and State statutes. However, if the requirements for the product are poorly or incorrectly defined and the
SOLUTION BASED DECISIONS IN EDUCATION

implementation planning is not complete, the project will fail to deliver the educational value expected and may ultimately prove to be a waste of scarce resources. Therefore, the challenge will be keeping all stakeholders and decision takers focused on the goal of maximizing educational value for the students.

Completing a detailed utility matrix provides visibility into solution capabilities and the assessed value of the capabilities. This visibility enables scrutiny and questioning by stakeholders and helps to ensure full understanding which will help to keep the focus on maximizing educational value to the students instead of something else. In examining school technology improvement failures, it appears the key decision takers lost focus on the goal of providing educational value. In Hoboken the computers were purchased with stimulus funding with little planning given to support or implementation. The idea of providing technology was not supported as a means to make teaching in the classroom more effective, but rather as a social responsibility effort. The purchase of computers for each junior-senior high school students was so they “could keep up with their wealthier peers” (Barshay, 2014).

In an interview shortly after LAUSD began issuing iPads to students John Deasy, LAUSD Superintendent, expressed his pleasure with the CCTP iPads and stated he saw the issuing of iPads as “a civil rights issue”. He stated, “My goal is to provide youth in poverty with tools that heretofore only rich kids have had. And I’d like to do that as quickly as possible” (Blume and Ceasar, 2013). Providing each student with a computer can provide significant value, but it also comes at a significant cost. Alternatives can provide similar value at significantly reduced initial and sustaining cost.

When education decision taker’s focus is on providing students individual computers or tablets for the purpose of having what wealthier students have without providing training,
content, and continual support; educational value is lost. Further, alternatives to provide higher value at the same or lower cost are being overlooked. According to Constantino (2014), all the LAUSD news of iPad problems has overshadowed the long standing problem of LAUSD students being denied educational opportunity due to libraries with insufficient books and staffing. Libraries can be learning centers leveraging technology and if staffed correctly, can provide access to students beyond the core school hours. Yet, according to a CBSLA.com report in February 2014, nearly 300 LAUSD elementary and middle schools are without librarians.

**Conclusion**

Additional research is necessary to develop a detailed application oriented framework for education decision takers use. Common issues are faced by school districts across the country, a tool which chapters the framework of these common issues should also allow adjustment to capture unique challenges. The benefit which can result from using a solutions based decision model such as the utility matrix for taking complex decisions is clear. Assigning values to the alternatives and levels of perceived satisfaction with each alternative allows one to examine the assessments more closely and to refine the selection process to maximize value. The matrix data can be displayed in a graphic format to provided better understanding and insight into the decision. The matrix data also serves as a record to support the decision and allow others to better understand why a particular decision was made.
SOLUTION BASED DECISIONS IN EDUCATION

References:


Videorecorded Microteaching Sessions in Teacher Training and the Opinions of Teacher Trainees

Selme Deneme, PhD
Trakya University,
Faculty of Education, ELT Division

Abstract: Microteaching has been employed in teacher education institutions for many years as one of the best techniques in teacher training. It is a beneficial tool to apply theory into practice and to help teacher trainees develop their teaching skills. Yet, there are some constraints observed in traditional microteaching sessions. The two most important and common ones are the limited opportunities of microteaching due to time constraints and the lack of opportunities to reflect on one’s microteaching performance. The researcher introduced a supplementary videorecorded microteaching activity for English language teacher trainees, and tried to remove the two common problems she faced in her microteaching sessions during her methodology classes. Since one micro-lesson was taught each week, the videorecorded sessions were conducted across a semester. At the end of the semester, a survey was given to the participant micro-teachers to collect data about their opinions on the OCVMT sessions. The findings showed that the proposed microteaching model worked well in teacher education programs and the student teachers showed positive attitudes towards the videorecorded microteaching sessions. The OCVMT sessions were found to solve the two common problems faced in microteaching: lack of opportunities for more microteaching practice and for self reflection.

Keywords: Microteaching, videotapes, video-recorded microteaching, teacher training
Ensuring Integrity for the Review of the Performance of Faculty

Higher Education

Paper-in-Progress Session

The review process and procedures that govern the evaluation of full-time Faculty at National University for reappointment and/or promotion is designed to assure consistent, objective, and equitable review of performance. The evaluation for reappointment/promotion includes a review of the full effort of the individual since the published deadline for the last completed evaluation and/or the faculty member’s last assignment of rank at National University, considering the accomplishments in the context of the rank sought.

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Ensuring Integrity for the Review of the Performance of Faculty

Submitted to the 2015 Hawaii International Educators Conference

Honolulu, Hawaii

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Abstract

The review process and procedures that govern the evaluation of full-time Faculty at National University for reappointment and/or promotion has been designed to assure consistent, objective, and equitable review of the performance of Faculty. At this University, excellence in teaching is a central institutional goal. Simultaneously, excellence in scholarship and service are highly valued aspects of the role of full-time Faculty members.

Faculty must be mindful of expectations when negotiating their Faculty Development Plans (FDPs) with their respective Chairs to ensure they are allowed sufficient time to meet the expectations in all three areas. Deviations from these expectations should be clearly noted in the FDP and referred to when the faculty member applies for reappointment and/or promotion. The evaluation of Faculty for reappointment includes a review of the full effort of the individual since the published deadline for the last completed evaluation.

In this paper, the process of evaluative review of faculty for promotion and reappointment will be examined at National University, according to the University policies and procedures, and by a calendar set up by the Provost, along with the success rate of faculty members reaching their goal of promotion and/or re-appointment. The evaluation of Faculty for promotion includes a review of the full effort of the Faculty since that Faculty member’s last assignment of rank at National University, considering the accomplishments in the context of the rank sought. The success rates of these results will be examined according to records compiled by the University Office of the Provost.
Ensuring Integrity for Review of the Performance of Faculty

Background, History and Mission of National University

National University, a private university of 28,000 students with headquarters in San Diego, California is dedicated to making lifelong learning opportunities accessible, challenging, and relevant to a diverse student population in its mission statement. Its aim is to facilitate educational access and academic excellence through exceptional management of University operations and resources, innovative delivery systems and student services, and relevant programs that are learner-centered, success oriented, and responsive to technology.

National University’s central purpose is to promote continuous learning by offering a diversity of instructional approaches, by encouraging scholarship, by engaging in collaborative community service, and by empowering its constituents to become responsible citizens in an interdependent, pluralistic, global community (National University General Catalog, 2012, p. 20).

National University was founded in 1971. The 1970s brought dramatic growth and change to colleges and universities across the United States, driven largely by the demands of baby boomers, minorities, and veterans to gain greater access to higher education. There was an overlooked demographic which encompassed all of those populations: the working adult. In 1971, National University was established to serve the needs of business executives, military officers, law enforcement officials, and others with the desire to learn while they earn. Its founder realized that few people could afford to put their life on hold for several years while they pursued a degree, so he tailored a flexible format that accommodated the academically disenfranchised nine-to-fivers.

Performance of Faculty to Meet Growing Accountability Demands

An important and welcome change has taken place on all college and many university
campuses over the last 30 years, except those with strong graduate schools of research: Teaching is being taken more seriously. Higher education institutions throughout the country have transitioned from providing lip service of the importance of teaching to sustained evaluation to decisions to evaluate and reward this concept. As never before, faculty members are being held accountable to provide solid evidence of the quality and effectiveness of their instruction. This solid trend has replaced the traditional role of the professor being hired to teach, and being rewarded for their research.

What has been behind this increased emphasis on the importance of quality teaching and effective instruction? The growing demands from students and parents facing spiraling tuition and college expenses, and the general public for increasing expenses of public colleges and universities. In addition, the rapid development of use of technology for offering online courses replacing on-site courses has dramatically changed the approach to instruction and altering the teaching role of professors. Probably the biggest demands increased teaching accountability have come from elected legislators and boards of public higher education institutions faced with unrelenting budgetary pressures from growing expenses of their operations. Consequently, both public and private higher education institutions are now under closer scrutiny faculty members teaching quality and instructional effectiveness. This has come from higher education administration and more significantly from regional and national accrediting agencies demanding assessment of instructional results on students.

These increasing demands and implementation have resulted from faculty member associations pushing back by demanding shared governance for fairness and equitable treatment from assessments and accountability. As a result, faculty re-appointments and promotions have become increasingly complex in recent years in terms of assuring consistent, objective, and
ensuring integrity                                                                                                            6

equitable review of their performance. In the face of these increasing complexities for delivering
fair and objective review of faculty performance, how can faculty member performance and
evaluation be objectively assessed?

**Early Research on Evaluation of Faculty**

Early research on how faculty performance is evaluated were based on reports from
academic deans or vice presidents. One of the earliest studies was by Gustad (1961) and
included a national sample of colleges and universities. Astin and Lee (1967) repeated the survey
about five years later with a similarly extensive sample of all types of postsecondary institutions.
Both studies asked administrators to indicate the importance of various sources of information
in evaluating, first, faculty performance and, second, teaching performance. The results were
analyzed by type of institution. In both surveys the university deans of arts and sciences ranked
department heads as the most important source of information.

In 1974, Seldin (1975) repeated the Gustad and the Astin and Lee surveys in 1974 with
Academic deans in liberal arts colleges in order to examine changes that might have taken place
in the eight-year period. The deans reported more emphasis on systematic student ratings in
evaluating teaching (an increase from 11 to 29 percent of the colleges) and slightly less emphasis
on research in evaluating overall faculty performance. The increased use of student ratings in
making decisions on faculty advancement was also reported in studies that included doctoral-
level universities (Bejar, 1975; Boyd & Schietinger, 1976). A Southern Regional Education
Board study found, in addition, that the major purpose of evaluation in doctoral-level universities
was to make decisions on faculty advancement, rather than to improve instruction, and that
department heads had greater responsibility than academic deans or vice presidents in making
these decisions (Boyd & Schietinger, 1976).
Use of a Teaching Portfolio/Dossier for Faculty Evaluation of Teaching

For years of evaluation of faculty members teaching performance for promotion and re-appointment, there was ample evidence for research grants, conference presentations, professional journal publications and books and/or chapters, there was little factual evidence and objective documentation for fair assessment and evaluation of teaching performance. In the past few years, a Teaching Portfolio has been introduced to not only evaluate faculty teaching performance through various means that will be explained later, but also provides validation for faculty scholarship and service.

A Teaching Portfolio is a factual description and reflection of a professor’s accomplishments of teaching, service activities, and scholarship accomplishments, which collectively suggests the scope and quality of the professor’s performance. It allows the professor to select samples of accomplishments and present them in an organized manner for display to others for their evaluation. Furthermore, it provides an opportunity for a professor to describe the uniqueness of his/her teaching, service, and scholarship from a separate reflection from each, and providing documentations for support in each of three categories.

Why should a faculty member spend time developing and organizing a Teaching Portfolio, which includes writing reflections and gathering documents and artifacts to support and profile the reflections? Because it makes good accountability sense to publicly and professionally document teaching in the same public manner that service and scholarship is presented and documented with artifacts. Portfolios also elevate the importance of teaching on a par with service and scholarship.

What are the uses of faculty Teaching Portfolios? Some uses may include developing documentation to change jobs to a different teaching position or a higher level position, future
employer requirements for finalist candidates, merit pay consideration, leaving a legacy of accomplishments upon retirement for successors, applications for grants or release time, for institutional use to provide data for their performance to their board of trustees, external organizations, accrediting agencies for re-accreditation, government agencies for grants, etc. However, the two most important reasons for a Teaching Portfolio are personnel in nature: re-appointment and promotion, and to enhance accountability of higher education institutions by showing improvement of teaching. Standardization of Teaching Portfolios, meaning that certain required components are needed for promotion and re-appointment.

National University Guidelines for Faculty Evaluation

The Teaching Portfolio model has been in place at National University, which has included a standardized Teacher/Dossier Portfolio system for review by multiple evaluation channels for the evaluation for re-appointment and promotion of full and part-time faculty members. This procedure has been approved by the University Faculty-Senate for their policies and bylaws, and adopted by the University Board of Trustees. Faculty achievement in the Teaching Portfolio is presented and reviewed in the traditional three areas of higher education faculty evaluation: teaching, scholarship, and service, described in detail below. The Provost’s Office sponsors a dossier development in-service for interested faculty members, to provide faculty the “know how” in creating a dossier, in-services, Faculty members base the design of their Portfolio/Dossier on their Faculty Development Plan, which is submitted in June of each year before the new academic year, as a basis for their self-assessment.

The Dossier Teaching Section provides evidence of successful teaching, including: written self-assessment by the Faculty member, the Department Chair’s review, peer review, administrative review, student assessments, and review of student learning outcomes. The
primacy of teaching should mean, among other things, that excellence in teaching carries more weight in deliberations regarding reappointment, promotion, and merit than does accomplishment in scholarship or service. Such evidence of teaching quality include, but not be limited to these documents:

- self-assessment, including commentary on peer and/or administrative reviews;
- course syllabi and course material;
- examples of student work;
- commentary on innovative teaching methods or upon any relevant information regarding courses taught;
- reflection on student advising;
- student evaluations and comments on the teaching/learning process

The second major component of the National University Teaching Portfolio, Dossier is scholarship. Teaching and scholarship being closely linked intellectual activities. Evidence of scholarship is varied but follows norms and standards legitimized throughout higher education:

- Documented and available for circulation and publication;
- Available for professional peer review;
- Grounded within a body of established learning and in some way extends or changes a component of that knowledge;
- Based upon traditions of presentation of material, persuasion, refutation and both interpretive rigor and interpretive differences;
- Significant and worthy of disciplinary or professional respect.
- Application of knowledge to problems or challenges in a discipline or community; or teaching which results in acquisition and utilization of knowledge in the teaching/
learning process rests first with the individual Faculty, but also with the reviewing Department Chair and School Personnel Committee.

Service is the third major component of the National University Teaching Portfolio/Dossier, which is defined as the work of Faculty which employs professional expertise to meet the mission of the institution. Faculty carry out service in many ways: to the University and its schools and departments; to communities and organizations; to national or local academic and professional organizations. establishes evidence regarding service to include a detailed self-assessment and documented activities such as:

- Organizing seminars, panels, or colloquia;
- Participating in and serving on departmental functions and committees that address and foster departmental goals and outcomes;
- Developing training programs, continuing education programs, consulting;
- Chairing a department;
- Participating in the recruitment, selection, appointment and mentoring of full-time and part-time Faculty;
- Developing professional growth programs for full-time and part-time Faculty;
- Serving on the Faculty Senate, school and University committees, task forces, or special projects;
- Leading community organizations in work relevant to one's academic discipline;
- Serving in leadership positions in professional organizations and societies;
- Assuming special administrative responsibilities or assignments;
- Participating in continuing education;
- Developing and implementing new academic programs;
• Leading effective academic program review.

**National University Steps and Timeline for Faculty Evaluation**

Faculty Dossiers go through several evaluation steps with finite timelines to lend maximum objectivity, quality and fairness and equity for each faculty member seeking promotion and/or re-appointment. At every level, summary letters are sent to the faculty member who authored the dossier for evaluation with copies to representatives of each of the five levels of evaluation. The university requires a strict timeline submission schedule to assure completion of the process.

At each level, the faculty member has right to write an appeal, if she/he disagrees with the written report and recommendations at any one level. The written appeal is limited to correction of any inaccurate information submitted by any of the levels, and must be written to the next higher level in time for dossier consideration at that level.

The first evaluation step begins with a faculty member submitting his/her dossier to his/her Department Chair, who reviews and writes an evaluation on teaching, activities, and scholarship based on a rubric: not meeting expectations, meeting expectations, and exceeding expectations. The second step is at the faculty-elected School Personnel Committee reviews and considers the Faculty review dossier and the Department Chair’s report in the context of reports of other Department Chairs. This Committee prepares a recommendation for each Faculty member seeking promotion. The committee seeks to ensure equity of evaluation across all departments of the school, then forwards its report to the appropriate School Dean for a similar dossier review, review of previously written reports by both the school personnel committee and department chair.
The third evaluation step is the school Dean, who reviews the faculty dossier along with the reports from both the department chair and school personnel committee, based on the rubric found in the university board polices on faculty evaluation. The school Dean writes her/his report based on her/his evaluation of the dossier along with recommending re-appointment and/or promotion, and submits to University Faculty Personnel Committee (UFPC).

The fourth step for the dossier evaluation is the faculty-elected UFPC, who follows the same procedures and the school personnel committee in step two. This committee has traditionally been the toughest hurdle for the faculty dossier to be recommended or non-recommended for re-appointment/promotion, and writes their report based on the same rubric as the school personnel committee.

The fifth step of evaluation is at the Provost level, who also follows the same previously mentioned procedures, culminating in a written report for the university chancellor/president. She will recommend the length of re-appointment, ranging from four to six years for an assistant professor, six to eight years for an associate professor, and eight to ten year term for a full professor.

The sixth and final level is the evaluation from the Chancellor/President, who also writes a report based on the recommendations of the previous five levels, and is considered the final decision. The chancellor/president also has the option of providing a one or two year deferred re-appointment/ promotion for any faculty member’s dossier not meeting the rubric standards for re-appointment /promotion. This deferral provides a faculty member additional time to correct dossier deficiencies for re-appointment/promotion re-consideration.
### NATIONAL UNIVERSITY SCHOOL OF EDUCATION FULL-TIME FACULTY

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*Other = evaluation not completed due to resignation

### NATIONAL UNIVERSITY SCHOOL OF EDUCATION ASSOCIATE FACULTY

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*Other = evaluation not completed due to resignation

***Other = evaluation not completed due to hire as FT faculty
Findings, Conclusions, and Recommendations

The below data shows a recent past year statistics of faculty re-appointment/promotion attempts and successes in both the Fall and Spring Cycles during the 2012-2013 academic year when the two authors served on the School of Education Personnel Committee. As readily apparent, the success rate of both full time and associate faculty members seeking re-appointment and promotion or both is very high for several reasons: 1) Provost’s Office Dossier Development Workshop for faculty prior to each fall and spring cycle, which was well-attended by faculty promotion and re-appointment candidates, 2) Multiple evaluation review levels of faculty dossiers with letter documentation for each level, which allows faculty members to submit additional data of letters if deficient in dossier, 3) Peer assistance to faculty members developing and organizing their dossiers by borrowing models of successful dossiers, and 4) Dedication and determination of faculty members to submit complete dossier with the goal of success for promotion and re-appointment. In addition to success of this process, faculty members believe that this process assures a consistent, objective, and equitable review of performance for effective teaching.

Recommendations for the future include digital submission of dossiers online for quicker review of multiple levels as opposed to the traditional operation of development, and continued assistance of promotion/re-appointment faculty candidates to assure their continued success. Software to make this possible is still in the development stage and is probably three to five years in the future for implementation.
References


National University General Catalog, 2012, p. 20)

National University Office of Provost Statistical Data on School of Education Re-appointments, Promotions. December 19, 2014


FACEBOOK IN TEACHING AND LEARNING ENGLISH
AT TAY BAC UNIVERSITY

Topic area: Higher education

Presentation format: Paper session

Description of presentation: E-learning and M-learning play a very essential role in modern language education; in which Facebook is considered as one of the most convenient and preferred utilities. This article proposed some activities which may help teachers make better use of Facebook to promote students’ communicative competence, motivation and confidence; and create a friendly teaching-and-learning environment; therefore improve students’ language outcomes.

Author information:
An Nguyen has been a lecturer of English for six years at the Faculty of Foreign Languages - Tay Bac University in Son La - a mountainous province in Vietnam where the majority of students are ethnic minorities. Graduating from ULIS – a leading language training university, her greatest ambition in life is to devote all her youth, knowledge and experience to the development of the education of Tay Bac University as well as that of Vietnam.
Currently, she is involved in projects conducted by the National Language Project 2020, especially in IT projects which she is really keen to continue contributing to developing.
Abstract

Facebook - the most widespread, convenient and enjoyable social network among university students to be connected and updated, will probably be a motivating and effective tool in English teaching-and-learning process. The data were collected from students’ questionnaires asking for their habits and attitudes of using Facebook as a means of learning English, and lecturers’ interview responses. I discuss in the conclusion some recommendations to enhance learning outcomes and learner interaction by maximizing the positive effects of Facebook as a teaching aid in English education. Especially, I emphasize the roles of educators in adopting and appropriating Facebook as a teaching-and-learning aid. My research as a whole emphasizes the importance of how to apply and appropriate Facebook in English education for mountainous university students who have limited knowledge and access to modern technology.
**Title:** The Use of Case Study Competitions to Prepare Students for the World of Work

**Topic Area:** Higher Education

**Presentation Format:** Paper Session

**Presentation Description:** As we continue in the new millennium, it is imperative that educational institutions prepare graduates who have the knowledge and skills that are increasingly needed and valued by business and industry. In this paper, the authors argue that the case study approach, and specifically case study competitions, constitute an ideal pedagogical strategy for achieving this objective in an effective and efficient manner; one that benefits both the student and the employer.

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The Use of Case Study Competitions to Prepare Students for the World of Work

Abstract

As we continue in the new millennium, it is imperative that educational institutions prepare graduates who have the knowledge and skills that are increasingly needed and valued by business and industry. The authors argue that the case study approach, and specifically case study competitions, constitute an ideal pedagogical strategy for achieving this objective in an effective and efficient manner; one that benefits both the student and the employer.

Keywords: case study method, case study competition, grounded learning experiences

Colleges and universities may be failing to adequately prepare students for the heightened demands of the 21st Century work environment (Robinson, 2006). It is becoming increasingly apparent that our educational institutions need to closer align themselves with the needs of the businesses and industries they are designed to serve (Bowers & Metcalf, 2008). Moreover, educators sometimes find themselves in a philosophical battle over the fundamental mission of higher education and its relation to the ever-evolving requirements of commerce (Chung-Herrera, Enz and Lankau (2003). Critical to this debate is achieving consensus with regard to the skills and competencies students need in order to be successful contributors to the companies that eventually employ them (Okeiyi, Finley and Postel, 1994; Tetreault, 1997)

Questions centered on how and what students learn in college are at the center of heated debate in higher education (Arum & Roksa, 2011). In some cases, this discourse has propelled institutions to use assessment tools that measure students’ learning and engagement (Kuh, 2009). Student engagement is one lens that can be used to better understand how students approach learning and acquire the theoretical knowledge and practical skills they will need to be successful
after graduation (Astin, 1993; Del Rios & Leegwater, 2008; Porter & Swing, 2006)). Colleges and universities have become increasingly interested in using engagement to assess career development and academic programs, and to better understand activities that best enhance student learning (Kuh, 2009).

**Keeping the Curriculum Relevant**

In undergraduate business education, several critical questions have been posed related to the amount of time majors spend studying and preparing for class compared to students in other disciplines. For example, Glenn (2011) suggested that the current perspectives of undergraduate business education is influenced by four key ideas: (1) business students are not as intellectual as students in other majors; (2) larger sizes of junior and senior level business classes results in a lack of rigorous homework; (3) overemphasis on group work hinders students’ ability to effectively complete individual writing assignments and research; and (4) national reports on student engagement (such as the National Student Survey on Engagement) may be misleading and disregard the substantial time and effort business students invest in activities outside the classroom such as internships.

Although these are valid concerns, there does seem to be substantial agreement between the public and private sectors that 1) soft skills such as communication and motivation are attractive to employers and 2) these skills can be enhanced through team projects such as case study competitions (Errington, 2011). Bowers and Metcalf (2008) report that many college business programs have undergone major curriculum transformations in order to increase the emphasis on critical skills desired by employers. Employers consistently indicate they want their new hires to be proficient in teamwork, critical thinking and communication skills (Bowers &
Metcalf, 2008). Case study competitions can serve as an optimal venue for undergraduate students to practice and hone these skills (Kunselman & Johnson, 2004).

Before proceeding with a discussion of the benefits associated with the case study method as a curricular component, however, it is important to consider its limitations. These include the observation that cases can often be divorced from actual business practice, they can accentuate a dependence on peer-teaching more than the acquisition of insights that are typically available through the instructor’s experience and research, and they presuppose, sometimes erroneously, that students have the requisite critical thinking skills necessary to adequately process them (Mitnick, 2009). Further, it has been asserted that the case study method can be inherently biased when facilitated by faculty who have consulted with the organization examined by the case, the particulars of many cases are often dated or purposefully modified in order to protect the integrity of current competitive strategies, and the effectiveness of the approach as a teaching tool often depends on the level of expertise exhibited by those who develop and facilitate the cases (Harris, 2012).

**The Case Study Method**

As George Kuh (2003) asserts, “the more students practice and get feedback on their writing, analyzing, or problem solving, the more adept they become.” Incorporating active learning and problem-based learning are useful methods for connecting theories and concepts to practice for students. According to Kolb (1984), this method permits students to participate in the learning process in a dynamic way, rather than as inert receptacles for knowledge, and it gives students the opportunity to study real life situations in order to solve complex, open-ended problems. Case study methods can provide many benefits for students (Kreber, 2001). In 2004, for example, Kunselman and Johnson reported, "The case study method as an active learning
tool provides students with a variety of important skills necessary for success both in and out of the classroom. Specifically, active learning helps students develop problem-solving, critical reasoning and analytical skills, all of which are valuable tools that prepare students to make better decisions and become better students and ultimately better employees” (p.92).

Case studies have been used effectively in education to assist postsecondary students in connecting theory to practice in a variety of disciplines and at multiple levels (Butler, Lee, & Tippins, 2006) and in applying a more rational approach to circumstances that require finely tuned decision-making procedures (Lee, 2007). Case studies have also been shown to be effective at fostering greater understanding of core content, precipitating qualitative self-reflection, encouraging peer collaboration for intellectual and professional growth, and augmenting self- and group-directed inquiry (Askell-Williams, Murray-Harvey, & Lawson, 2007). Additionally, Sandstrom (2006) contends that case studies alleviate boredom in the typical classroom and facilitate both process and content learning in a variety of tangible ways.

Harrington, Quinn-Leering & Hudson (1996) note that case study methodology provides “opportunities to recognize specific events as problematic, gain an understanding of them; reflect on them and on the consequences of action, and devise sensible, moral and educative ways of acting in doing so” (p. 26). For example, the Harvard Business School’s case study strategy (Rebeiz, 2011) explicitly aims to condition students to become future managers through the acquisition of a combination of functional skills (e.g., strategic management skills), conceptual skills (e.g., decision-making skills), interpersonal skills (e.g., teamwork skills) and leadership skills (e.g., communication skills). Moreover, the experiential learning experience provided through case studies facilitates students’ assimilation, synthesis, and application of fundamental course concepts (Brannan, White, & Bezanson, 2008). “The Case of Acme Plastics,” which
accompanies this article, is a good example of a situation in which students have to draw upon their previously acquired knowledge and problem-solving skills in order to respond effectively to a realistic scenario.

**Case Study Competitions**

Case study competitions are universally recognized as useful co-curricular activities in the field of business education; they are considered excellent avenues for preparing students for the workforce (Umble, Umble and Artz, 2008). In a typical competition, teams of students are provided with a realistic scenario -- usually a particular situation that requires developing an appropriate action plan (Rebeiz, 2011). After a specified period of time, each team presents its proposed solution to the problem to a panel of judges who are considered experts in the area represented in the case study; the judges subsequently decide which team developed the best response to the given circumstances (Corner, Bowden, Clark, Collins, Gibb, Kearins & Pavlovich, 2006). There are a number of research studies that support the positive learning outcomes associated with case study competitions (Menna, 2010; (Corner et al, 2006). Case competitions provide an opportunity for students to work in self-directed teams, which mirrors what many of them will encounter after graduation (Kunselman & Johnson, 2004).

When developed and used in an array of formats and across business disciplines (for example, accounting, finance and marketing), the approach can increase confidence and equip students with the skills and experiences necessary to make them more successful and competitive employees (Maier-Lytle, McGuire & Ehlen, 2010). Case study competitions “provide competitors with opportunities to gain specialized knowledge, improve communication skills, develop a sense of teamwork, and heighten their chances in the job market” (Maier-Lytle, McGuire & Ehlen, 2010). Traditionally, these contests have been associated with graduate
programs and primarily involved students at the MBA degree level (Rebeiz, 2011). Over the last couple of decades, however, case study competitions have become much more common among undergraduate programs (Maier-Lytle, McGuire & Ehlen, 2010). Some empirical studies have suggested that undergraduate students’ participation in case study competitions is positively linked to learning outcomes such as strong oral and written communication skills, more mature critical thinking skills, and a heightened awareness of the inherent complexities associated with real-world problems and solutions (Umble, Umble & Artz, 2008).

These learning outcomes are also aligned with student engagement (Kuh, 2003). As mentioned previously, student engagement refers to the amount of time and level of participation students tend to dedicate to purposeful activities that impact their overall educational experience (Astin, 1993; Chickering & Reisser, 1993, Kuh, Schuh, Whitt & Associates, 1991). As colleges and universities have integrated student engagement more definitively into their measures of student success, the potential for case study competitions to serve as a viable tool to assess overall institutional quality has become more evident and accepted (Errington, 2011; Ryan, 2008).

**Grounded Learning Experiences**

Grounded learning involves designing classroom activities and exercises that are interactive and empower students to collaborate and cultivate strong peer relationships (Corner et al, 2006). As a form of grounded learning experiences, case study competitions expose students to real-world experiences, encourage them to take ownership of their learning, and help to assimilate their ideas into theory and practice (Rebeiz, 2011). Umble, Umble and Artz (2008) found similar opportunities for enhanced team learning through complex, unstructured projects such as case study competitions; i.e., group-based activities tend to enhance the student learning
experience and provided a better forum to engage students in an active learning experience. Case study competitions combine course content with real-world issues that students will confront in a nonschool environment (Menna, 2010), which further reinforces the notion that grounded learning experiences are inherently superior to other pedagogical approaches for teaching the knowledge and skills deemed desirable by employers (Corner et al, 2006).

Although the effectiveness and success of case study competitions vary from institution to institution, the literature suggests that undergraduate programs are still necessary to maintain a pipeline of competent employees for business and industry (Glenn, 2011). Further, it has been demonstrated that use of grounded learning experiences in both formal courses as well as co-curricular activities, including those sponsored by various professional organizations, is effective in cultivating the competencies needed by today’s employers (Bale, Senteza & White, 2013). Yet despite the evidence supporting the relevance of case competitions to the efficacy of undergraduate education (Menna, 2010), little is known about how students perceive the applicability of these experiences, and the proficiency they acquire through them, to their concurrent coursework or their emerging careers (Kunselman & Johnson, 2004).

Conclusion

Students’ participation in case study competitions can positively influence their academic achievement and vocational development, has the potential to enrich the quality of business and other related courses, and could enhance their communication skills, making them more suited to negotiate an increasingly competitive work environment (Butler, Lee & Tippins, 2006). Along these same lines, Hartman and McCambridge (2011) contend that effective communication skills will continue to be important to employers and organizational success. Participation in case study competitions is one way educators can further emphasize and reinforce the importance of
effective communication skills, which are essential to proficiency as an individual employee or as a member of a work team (Umble, Umble & Artz, 2008). Further, case study competitions have also been shown to assist in developing and refining students’ capacity for efficient problem-solving and decision-making – capabilities most managers and supervisors routinely indicate they want in their employees (Kreber, 2001).

There is little doubt that use of case study competitions positively impacts students’ educational achievement and supports the field of business education in a significant and concrete manner (Kunselman & Johnson, 2004). In particular, employers value the outcomes achieved through case study participation (Bale, Senteza & White, 2013). Johnson and Winterton (1999) noted that theories, concepts, and tacit knowledge gained from performing tasks must be merged together to create an effective academic experience. Again, there is a feeling among some employers that educational institutions are not consistently producing graduates who possess the requisite knowledge and skills to successfully compete in today’s global business environment (Hertzman, 2006). Many graduates may lack the basic skills needed to be effective and are not ready for the demands that will be placed on them in the workforce (Peddle, 2000). More prolific use of case study competitions could go a long way toward remedying this situation.
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*Note:* This paper was originally published in *Industry and Higher Education, (27)*3, 157-162, June 2013, and was submitted to HICE with the permission/approval of the original publisher.
Reflections on Vygotsky’s learning theory in the light of actor-structure debate as a theoretical framework for understanding preschoolers’ participation in language acquisition

Introduction

Until recently, early language learning research was mostly based on a psycholinguistic perspective of the cognitive and linguistic processes. Scientific research changed, however, when the socio-constructivist learning theories began, first, to concern actors as actively participating in language socialization and, second, to consider the context and conditions in which actors acquire language. In particular, the social interaction between agents and the relationships between human agents and sociocultural context started to play a significant role in perceiving language and learning as being of social nature. Theorists, such as Bourdieu (1977) and Vygotsky (1978) conceptualized learning in terms of how sociocultural context plays a significant role in the ways in which actors learn and acquire language. Social relations and social positions become an important aspect of the analysis, and language acquisition, viewed as rooted in sociocultural interactions, emerged at the front stage. Thus, the concerns of human agency and structure within the learning process and language acquisition will be the main theme of this paper.

This paper refers to Vygotsky’s theory on cognitive and learning development. I will use his theory to look at learning development in the home environment of children of four years of age. The following work is divided into three parts. First, I attempt to search for the roots of Vygotsky’s theory on learning. I will do this by considering the epistemological and ontological assumptions of (sociocultural) constructivism. Second, the epistemological argument extends to concerns about the basic nature of reality and aspects of one’s autonomy (freedom). These aspects are reflected in the actor and structure framework. Third, I will reflect over learning, language acquisition and the zone of proximal development in Vygotsky’s theory in the light of the actor-structure debate.

(Sociocultural) Constructivism as the framework for Vygotsky’s theory

Many learning theories are commonly used in current studies and are grounded in different traditions; from individual oriented, such as Piaget’s theory, to sociocultural theories, with Vygotsky at the front.

Constructivism extends the cognitive view in terms of an actor’s awareness of his own thinking and creates meanings or interpretations out of experiences developed during interactions with the surrounding environment. The main assumptions of constructivism highlight the
construction of reality and knowledge. Constructivism contains varying degrees of radical opinions; ranging from actor-oriented to structure-oriented. Radical constructivists question the so-called “metaphysical realism”. They do not deny an existence of an objective reality but they would rather highlight that an individual cannot rationally know and access reality beyond his own experience (Glaserfeld, 1984, p. 24). All that exists in the world is a product of the mind according to radical constructivism, whereas a less radical constructivists will state that the world is real and external from the actor. “The mind is instrumental and essential in interpreting events, objects, and perspectives on the real world, and (...) those interpretations comprise a knowledge base that is personal and individualistic” (Jonassen, 1991, p. 10). The constructive ability of the mind comprehends physical and social experiences obtained during interactions and as an output, in the form of interpretations, it precedes thinking (Jonassen, 1991, p. 10). Thus, knowledge “is a function of how an individual creates meaning from his or her own experiences” (Jonassen, 1991, p. 10) gained in the interaction with the environment. Cogito, ergo sum (“I think, therefore I am” – Descartes) reflects the constructive mind.

What does it mean to understand learning as a theoretical concept? In constructivism, actors “create meaning as opposed to acquiring it” (Ertmer & Newby, 2013, p. 55). The constructivist theories on learning emphasize the shift from behavioristic theories that view the “passive-reactive” child (i.e. learning theory developed by Skinner) to the interactive child (i.e. Vygotsky). The acting child is seen as an actor – or social being – who develops and participates in knowledge construction through interaction within sociocultural settings (Bæck, 2011, p. 414). Thus, as we can read in Ertmer and Newby (2013), actors perceive the world based on their individual experiences and interactions with the environment. Their knowledge is purely interpretative, seen in the mirror of their own experiences and open to change at any time (p. 55). Moreover, the sociocultural framework emphasizes the society’s contribution to individual development. Packer and Goicoechea (2000) describe learning, based on several other definitions, as “an integral part of generative social practice in the lived-in world, the result of guided participation or legitimate peripheral participation” (p. 229). The social factor in the sociocultural theories on learning explains why actors develop knowledge and concepts differently in different cultures. This is related to an empiricist assumption that an individual learns concepts in the environment through interactions and associations made in relation to that environment (Stafford & Bayer, 1993, p. 22). While growing up, a child becomes a part of a culture through the constant learning within that culture. Brown and colleagues (1989), cited in Packer and Goicoechea (2000), say that learning includes the so-called “enculturation”, that is “picking up the jargon, behavior, and norms of a new social group, adopting its belief systems to
become a member of the culture” (229). Every individual is allocated to some social context that influences one’s experiences and thereby learning as a process of individual meaning-making based on experiences developed through interaction with the environment.

Thinking about learning in terms of interaction between actors and structures, as it happens in constructivism and sociocultural approach, gives flexibility to the analysis of the agency and system forces. This flexibility emerges in terms of recognizing the actor’s autonomy and structural influences that affect learning processes. Some learning theories give more freedom to agency, i.e. Piaget, whereas others try to balance actor and structure or give primacy to the structure, i.e. Vygotsky. In the next two sections, I will take a closer look at, first, agency and structure, and second, actor and structure appearance in Vygotsky’s theory.

**Actor and structure instead of actor versus structure?**

Biesta and Tedder (2006) say that in the process of learning, actors develop abilities and skills that let them make independent judgments (p. 4). Further, those judgments establish a basis for autonomous action (Biesta and Tedder 2006, p. 4). The authors point out the links between Kant and Piaget, who understand cognitive processes in terms of autonomy. They say that the idea of rational autonomy leads the discussion about education, learning and critical thinking. They argue that Marxism, and approaches influenced by it such as critical and emancipatory approaches, contributed to education by emphasizing rational autonomy as an aim in education. The question of how much autonomy, or human freedom one has, places the researcher on the continuum line; where at one end we find methodological holism and on the other methodological individualism. The ends of this continuum are respectively equivalent to the structure and agent division. Education and learning processes opt for understanding agency and explaining how agency affects learning and how learning impacts agency. Thus, this view suggests a combination of agency and structure framework. Biesta and Tedder (2006) emphasize that whether the process of education has a positive or negative influence on agency, is an empirical matter. Yet, they add, “what counts as evidence for success crucially depends on how agency is defined and understood” (Biesta and Tedder 2006, p. 5).

Hollis (1994) starts the discussion on the topic of action and structure by asking the question, “Does structure determine action or action determine structure? (p. 6 and p. 9). In “Introduction to philosophy of science”, he gives space to both structure and agency. He argues,

“One attempts to account for the action by reference to movement in an underlying social structure and thus proceeds, so to speak, ‘top down’. The other takes the actions of individuals to be the stuff of history and regards structures as the outcome of previous actions. Here the direction is ‘bottom up’.” (p. 5).
Traditionally, the theoretical views on agency and structure put attention either to the primacy of a structural or individualist standpoint. For the structural standpoint – the ‘top down’ approach, action is “nothing but the constrained result of some hidden holistic principles” (Müller, Phan, & Varenne, 2009, p. 1). Within this perspective, the system (i.e. society, culture) is seen as a determinant for human agency. In the research on learning within family environment, the family, located in some bigger context, could be seen as a system that is determined by that context (culture) and that itself determines family members. On the other hand, the individualist standpoint – the ‘bottom up’ approach, suggests that society is “nothing but the result of the individuals’ actions” (Müller et al., 2009, p. 1). Here, the focus is directed on the individual featured as an active actor who constructs and reconstructs social world. In this context, the family environment would be reduced to individual members of the family who are born with no dimension and whose “behavior can only be understood in terms of the meanings the actor attributes to it” (Chibucos, Leite, & Weis, 2005, p. 237).

Methodological holism and methodological individualism refer to the methodological aspects of structure and action, respectively. Methodological holism gives primacy to the structure and refers to causal power. We can go back to Marx to search for the origins of this thinking: “It is not the consciousness of men that determines their being, but, on the contrary, their social being that determines their consciousness” (cited in: Hollis 1994, p. 12). Also Durkheim saw the society as something more than a mere aggregation of individuals. In this view, social structures determine human activities and at the same time are independent of individuals. Thus, people are entirely a product of a society that imposes specific roles to play. Any choices taken by individuals within the system are irrelevant and have no force to influence social processes or make change. According to Hofmann (2008), holism “represents the notion that actors are socialized and embedded into social structure and institutions that may constrain, enable, and generally shape individual’s dispositions towards capacities for action” (p. 21). Here, the teaching-learning process in the home environment would be set according to the sociocultural system and the rules of this system. It could be, for example, a traditional way of teaching – instructor-centered teaching. Radical holism denotes determinism by pointing out that the attributes of an actor are just a function of his/her place in the system. It other words, the system as a supreme whole determines the parts of the system (Kvernbekk, 2014). In that sense, the actor is passive, his identity is completely determined by the system and the agency is explained with the system attributes. Norms, traditions, customs, language, values, etc. are characteristic for the system and its causal powers. According to the strong version of holism, actors would always be alike and to change an individual there must first be a change in the
system. However, such a statement poses some difficulties in explaining the within-group differences that may be even more significant than between-group differences. Thus, the structure cannot be the only explanation for a human’s agency.

Oppositely, methodological individualism adopts its assumptions from Adam Smith (1776). This view emphasizes human agency and interaction. Within this paradigm, an actor is seen as a predominant in the social world, having an infinite freedom of choice and action. Social structure, on the other hand, is nothing more than an aggregation of interacting individuals, a consequence of the actions and activities of interacting agents (Hofmann 2008). Mill (1859) claims that “the phenomena of human thought, feeling and action are subject to fixed laws” (cited in: Hollis 1994, p. 12). Hollis develops this thought later in his book by writing that “this insists that actions always result from the desires and beliefs of the agent and not from any external cause, such as social institutions” (p. 112). For instance, Weber offered an individualistic approach to define actor and agency. He gives space to an “actor’s subjective meanings and he had an empiricist’s skepticism about social structures as real entities with causal powers” (Hollis, 1994, p. 42). For Weber, an actor would have purely individual meanings of the action he or she is involved in (Hollis, 1994, p. 148). Thus, according to the Weberian tradition, agency stresses the importance of “meaning-making” developed through interactions. In other words, any collective fact must make sense for an actor (Müller et al., 2009, p. 1). Learning through discovery, making sense out of experiences and interactions would probably be a good reflection of the view when thinking about the home environment.

One can ask about the responsibility the agent takes for the actions he or she is involved in. Here, the answer concerns the relationship between agents and structures. At the core of human agency is the so-called actor or agent who is capable of acting autonomously within a social context. An often-asked question, according to Hollis (1994), is “whether the social science[s] increase human freedom or destroy the illusion that we have any” (p. 12). Hollis suggests an alternative to the historic opposition structure versus actor by asking: "Is it a bit of both?" (p. 6). He distinguishes between holistic and individualistic strategies for agency that are rooted in interpretative or hermeneutic social science, and that he divides into two types of categories, namely explaining or understanding. However, the main thought is that “social action needs to be understood ‘from within’ [...]”, rather than ‘bottom up’ or ‘top down’ (p. 6). We can read further in Hollis (1994): “Instead of seeking the causes of behavior, we are to seek the meaning of action. Actions derive their meaning from the shared ideas and rules of social life, and are performed by actors who mean something by them” (p. 17). Müller et al. (2009) develop Hollis’ ideas on structure and action integration. They argue:
“Such an approach could be linked with a commitment (explicit or implicit) in a specific social ontology that is focused on the interaction, synchronized or not, between structural properties and personal and/or inter-individual properties. Society is represented neither like a set of individuals, nor like a supra-individual entity, but like a system of “inter-connected” individuals having global properties sometimes reducible to the individuals and their interactions, but also sometimes irreducible” (p. 2).

By applying this view to home learning, it underpins the assumption that a child learns best by not only receiving knowledge but also by having a chance to interpret it, learning through experiencing or acquiring new knowledge out of previous actions.

Accordingly, the agency-structure debate is bound up with terms *practice* and *action*, which were actively discussed by sociologists in the 1970s and 1980s (i.e. Bourdieu 1977). The concepts are often captured in terms of relations and interactions, as discussed above. The social structure shapes human agency, while at the same time actors, by their active agency, are seen as being able to change the social system (Hofmann 2008, p. 21). According to Bourdieu (1977), structures exert pressure and limit actor’s freedom, but also the agent, within the parameters of these structures, uses his/her abilities to think, reflect and act to construct new and unique social and cultural phenomenon. Structures exist independently of actors, but still direct their behavior, and at the same time, they create a field of choices, opportunities and paths of creative activities. The structures are transformed into practices, closely linked with the actor’s lifespan. The world is not only a passive knowledge, but also an active practice, although rooted in the objective relations that govern different spheres of an actor’s action. Social practices are the result of the internalization of the social world and as such closely related to *habitus*. Habitus is “a system of durably acquired schemes of perception, though, and action, engendered by objective conditions, but tending to persist even after an alteration of those conditions. (...) It is the product of social conditionings and so links actual behavior to the class structure” (Wallace & Wolf, 2006, p. 116). Thus, habitus is a system of sustainable and capable disposal, which is being transposed. Habitus can namely be transferred from parents to their children. It is a link between the objective and collective on the one hand, and the subjective and unitary aspects of social reality on the other. As part of an actor’s cognitive, emotional and behavioral habits, habitus is integrated into some broader social forms such as institutions, customs and traditions (Bourdieu, 1977). Overcoming the dualism of agency and structure is possible, for example through involving *habitus* that orients agents to specific goals and strategies (Bourdieu 1977). This approach enables agents to make choices. Yet, those choices are an attribution of who the actors are and the actor’s situation at the time of the choice.

In the discussion above, I have argued that the agency is neither entirely an individual matter, nor is the structure the only explanation for humans’ agency. It is possible to bring
together both agency and structure by saying that actors do not develop in isolation. They act among and with other individuals, and within social structures, which enter their activities. Their desires and beliefs are somehow “structured”, i.e. through social learning, which in turn can be viewed as a position between Durkheim and Weber. Packer and Goicoechea (2000) say: “learning involves becoming a member of a community [and] entails transformation both of the person and of the social world” (p. 227). How can this transformation be viewed? In the next section, I will try to reveal agency and structure in Vygotsky’s theory.

Vygotsky’s learning theory in the light of agency and structure

Scientific theories, included learning theories, implicitly or explicitly reflect and propose the solution to the philosophical duality, in this paper, actor versus structure, and otherwise often considered just as the mind versus the matter. Descartes introduced the mind vs. the body (matter) dualism and this dualism is meant to be overcome. As Stahl (2003) writes, “contemporary learning theories reflect implicit (often unacknowledged) philosophic commitments defined at different stages in the history of philosophy, representing different responses to this dualism” (p. 2). In order to understand the position of an actor in the learning process, I will discuss the actor-structure division in Vygotsky’s theory (1978). In this regard, the following question will be relevant: What is the degree of an individual actor’s involvement in creating the meaning and the level of structural forces in learning? To answer that question, I will reflect over learning, language acquisition and the zone of proximal development in Vygotsky’s theory.

It is impossible to omit Vygotsky when talking about sociocultural learning theories. He contributed to the sociocultural approach with the theory on cognitive development. Vygotsky’s theory posits the role of cognition and the learning process in the social context. Furthermore, this theory can be seen in regard to agency, viewing the actors as being able to learn through active interaction in the environment (Stafford and Bayer 1993, p. 23). How do agency and structure emerge? Actors participate in constructing the social world through interactions. However, I think that what is already constructed, meanings actors put into their actions, their knowledge and concepts influence social action. In addition these processes somehow form an agency-structure loop. In other words, agency and structures mutually impact one another. Additionally, if one considers the fact that an actor is born to some society then, as Sibeon (1999) points out, “[an] actor’s forms of thought and actions are to a large extent structurally predetermined by macro-phenomena such as culture (…)” (p. 139). Vygotsky wrote about learning and development as being involved in the sociocultural context. He developed a model of “zone of proximal development” and spoke about language acquisition as being one of the
premises for successful learning. In “Mind and society”, he writes that “learning is a necessary and universal aspect of the process of developing culturally organized, specially human, psychological functions” (Vygotsky, 1978, p. 90). In other words, learning precedes development of higher order thinking. It stays in opposition to Piaget’s way of looking at learning. Piaget maintained that learning is a cognitive process and a result of development. Piaget was strongly criticized by Vygotsky. That criticism was a source of inspiration for Vygotsky, as well as the philosophy of Hegel and Marx, who looked at the learning process in the context of interaction and as culturally mediated. “His philosophical premise is Marxist and materialist, with focus on how people shape the world through work and collective activities in different practices, and how they are thereby formed as psychological beings” (own translation from Norwegian; Bæck, 2011, p. 414).

Vygotsky speaks about two primary resources of learning, namely social interaction and language acquisition. Language can be viewed as a tool that facilitates communication between actors. It becomes a property of a particular society. There are several aspects involved in processing language skills, but the overall language acquisition is somehow a coupling between the use of language that expresses thinking on one hand, and thinking that takes place with a help of language on the other (Vygotsky 2001: 9). My understanding is that language expresses the actor’s thinking. Language would not exist without an actor placed within a particular sociocultural context. This means that the context, in which the actor lives, is helping to shape and determine the meanings he or she put in different words and expressions. In this way, language cannot exist as an abstract system (Postholm, 2010, p. 22). Vygotsky highlights that language is an attribute of the sociocultural context and that it connects actors (Bæck, 2011, p. 417). Language is there to make sense of social interactions. Vygotsky speaks about meaning-making in terms of consciousness that “does not exist situated inside the head of the individual but in the interaction – realized through material activity – between the individual and the objective forms of culture created by the labor of mankind” (Miettinen, 1999, p. 173). Thus, language is identified as having a central role in cognitive development. Language enables internalization of objective norms. This is the place, I believe, where Vygotsky, strongly inspired by Hegel and Marx, makes a big step towards the structure approach. Therefore, I think, language possesses a social function that, in turn, determines agency: how actors experience reality in addition to how they describe it. Hollis (1994) highlights an interesting aspect of language and meaning. He raises the question; “what [do] words mean and what [do] people mean by them”? (p. 144). Language, in his view, is “a prime candidate for the key to the peculiarity of social life” (p. 144). This means that language cannot be treated only as a device
necessary to express an actor’s purposes. In this view, language mediates social actions and interactions through implicit contribution to thought creation.

Dahms, Geonnotti et al. (2007) point out that language enhances the actor’s ability to engage in social interactions and share experiences. The *interaction* component of Vygotsky’s theory opens for a discussion about agency. On one hand, one can emphasize interaction between actors in the learning process, whereas on the other hand, the active element involved in the interaction is aimed at structures and interpretation of symbols, signs, language, etc. (Bæk, 2011, p. 414). Vygotsky (1978) did not see learning as an individualistic process, but rather as an effect of interaction with more capable actors, involved in specific social context. Every individual lives within some social context and thus, humans have needs for social participation, which in turn is essential for learning. The basic ideas of Vygotsky’s theory were expressed in the thinking that social interaction precedes a child’s development. An actor can be seen in Vygotsky’s theory as creative constructor of the social world he or she has been born into. Bæk (2011) explains Vygotsky’s view on interaction. She defines interaction as a process that goes back and forth, i.e. from a child to a parent and back again. Interaction enables a child to construct concepts and thus, it refers to a child’s capacity as an active, purposeful and acting actor (Bæk, 2011, p. 414). Author concludes: “It is not that the child ‘takes his’ knowledge contained ‘out there’, but the child is actively participating in a process where knowledge and learning are created and negotiated” (own translation from Norwegian; p. 414). This covers a philosophical assumption that knowledge is constructed by the actor and/or society (Campbell, 1998). I perceive that during the learning process an actor can act both independently and together with others. He or she makes free choices and is a locus of decision, for example when it comes to make sense out of the experiences. Giere (2007) points out some characteristics of epistemic agents that, in my opinion, reflect the actors Vygotsky might have thought of.

“Agents are said to have minds as well as bodies. Agents are conscious of things in their environment and are self-conscious of themselves as actors in their environment. Agents have beliefs about themselves and their environments. Agents have memories of things past. Agents are capable of making plans and sometimes intentionally carrying them out. [...]” (p. 316).

Further, the definition above can be used to explain the agency-structure loop. The nature of social structures and social change “arises as the result of the action and interaction of individuals” (Elster cited in: Hollis 1994, p. 109). However, structures influence an actor’s choices and possibilities for the expression of agency. Regarding this, the social interaction between an individual and the environment is viewed concerning a child’s learning through interplay within the system. Interaction between child-parent and the physical, social and cultural
structure that the home environment represents plays a key role in the child’s development. Therefore, structures become a crucial aspect in the learning process. It is, namely that parents, having the ability to act but at the same time being a part of the system, guide a child’s learning (Stafford and Bayer 1993, p. 23). Here is where we come to Vygotsky’s “zone of proximal development” (ZPD). The environment becomes an inherent element and necessary for the individual’s development. How does this happen? ZPD explains the way in which learning takes place. The zone is described as “the distance between the actual development level as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance or in collaboration with more capable peers” (Vygotsky, 1978, p. 86). Yet, learning occurs above one’s current level of competence, called by Vygotsky “the actual developmental level” (Dahms, Geonnotti et al. 2007, p. 4). This means that a child through interaction with a parent, tutor or more capable peer will perform better. In Bæck (2011), we read that a child’s background is an important factor when it comes to learning and development. She argues that interactions between the child and others within the physical and symbolic structures creates the society where the child grows up. Through interactions one gains new experiences that forms him or her as a “thinking, feeling and communicating creature” (p. 414).

I can agree that a child engaged in guided learning would enhance his or her knowledge. However, if an interaction during learning were necessary for a child’s development, this would mean that structures have a significant influence on actor’s life. I have found a confirmation for my words in Bæck (2011) who argues that

“cognitive skills, social action, identity and language as products of social experiences, which are products of actors meetings with social, cultural and physical structures involves cognition, action, identity and language as a mediating tool will vary according to social, cultural and physical structures actors relate to” (own translation from Norwegian; Bæck, 2011, p. 415).

Sociocultural theory proposed by Vygotsky considers, first, how adults and peers influence individual learning, and second, how cultural context and one’s beliefs impact how learning takes place. In what terms can the impact of one’s attitudes and beliefs (here parental beliefs) be seen? I will assert that, at this point, Vygotsky’s theory can be “translated” through Bourdieu’s (1977) *habitus*. Bourdieu (1977) questioned the fact that the sociocultural context affects children’s learning evenly. Although, Vygotsky and Bourdieu are positioned in different frameworks, both have grounded their views in Marxism and materialism. The basic thought of Bourdieu and Vygotsky was that actors are born into some sociocultural context, and the structures of this context influence an actor’s actions. Bourdieu was interested in understanding
“how people (agents) get a place in the social and cultural structures that surround them, and his concept of habitus can be understood in terms of how mental structures develop in early childhood” (Bæck, 2011, p. 415). In Vygotsky’s theory, habitus could explain why a child would develop differently, first, having other parents, tutors, and second, in diverse sociocultural contexts. Habitus is formed in childhood by allowing actors to access knowledge of the world. However, the access to this knowledge is limited and the knowledge is already structured by others, for example parents at home, neighbors at the playground, teachers in kindergarten and school, etc. Thus, the child, born into some environment, in the first years of life shares the reality as it appears to others, preferably its parents (Bæck, 2011, p. 415). Bæck continues her argument saying that knowledge achieved by a child is internalized and later used during action (p. 415). However, at this point, we have to remember about variety and number of different environments, such as family, peers or educational system, that deliver varying knowledge to the young child. I think, one can look at habitus as a factor that challenges, but does not determine, a child’s learning.

During guided learning, an actor is supposed to actively construct knowledge. Cognitive development is the process of acquiring culture and thus, it is the output of socialization. This enables the internalization of objective norms of human behavior (Schmittau 1996, p. 88). Socialization becomes a significant process when learning. Miettinen (1999) describes it as follows: “During socialization, an individual internalizes, by participating in common activities with other humans, the means of culture: language, theories, technical artifacts, and norms and models of acting” (p. 173). On such a view, Vygotsky is drawn near a holistic approach and Durkheim’s opinion on socialization through which actor internalizes the values and norms that underlie the requirements actors originally experience as an external constraint (Guneriuussen, 1999, p. 288). Vygotsky was focused on studying how language internalization, as “the most important of cultural means”, proceeds. He formulated the genetic law of cultural development; according to which there are two stages in a child’s cultural development. First, a child develops interpsychologically, that is, in interaction with others. Second, development proceeds within the child as an intrapsychological plan (Miettinen, 1999, p. 174; Vygotsky, 1978, p. 57). In general, as Miettinen (1999) writes, the genetic law of cultural development is a “formulation of the mechanism through which the forms of material culture are internalized by an individual due to participation in collective material activities in society” (p. 174). This again, means that structure shapes the constitution of the individual personality.

When I introduced the assumptions of (sociocultural) constructivism, I assumed that the human factor was very important. However, as mentioned earlier, within the constructivist
theories on learning, there are some that are closer to the actor, whereas others that lean toward the structure. In my opinion, even though there is an actor’s active component in Vygotsky’s theory, still there is a lot of weight placed on the external factors assigned to structure.

Conclusions
In this paper, I aimed to look at the agency and structure debate and their relevance for the discussion about learning. Additionally, I believe it was necessary to write about ontological and epistemological assumptions in (sociocultural) constructivism. The insights of this philosophical branch raise a debate on the origin of knowledge: “Where does knowledge come from and how do people come to know?” (Ertmer & Newby, 2013, p. 47). Further, one of the aims of that paper was to explain the importance of the mind and the process of meaning-making. When speaking about the mind, the aspects of freedom and socialization are essential to consider. Yet, the power forces that appear in the system (culture) are linked to the topic.

Vygotsky is a sociocultural constructivist who recognizes environmental impacts in learning and cognitive development. He underlines the contribution that social context makes to the actor’s development. In my view, Vygotsky’s theory tries to balance agency and structure. Although, on the continuum line of constructivist theories on learning I would place him somewhere close to the holistic thinking that gives the primacy to the structures. Vygotsky tries to combine actor and structure by highlighting the importance of social interaction and language acquisition, which contribute to obtaining knowledge, and that are grounded in sociocultural context. An actor has a “potential” that is revealed in individual learning and under a guidance within a structured world. As far as I understand Vygotsky’s theory of cognitive development, he does not leave an illusory impression that the actor has unlimited choices and freedom. Agency and structure are instead seen as a loop where agency determines structure that again determines actor’s choices and so on ad infinitum. The process of socialization, the degree of adult (parent) involvement in a child’s learning process, mediated by sociocultural context points out the role of structures in a child’s development, whereas making meanings out of experiences highlight the actor’s contribution in shaping reality.
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TITLE: “Keep Stop Start: Assessing a supported education program for persons living with mental illness.”

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Introduction
As part of a Social Science and Humanities Research Council of Canada (SSHRC)-funded two-year research project on supported education for adults living with mental health issues, we interviewed participants, staff and volunteers in the Ontario Shores Supported Education Program (OSSEP). OSSEP is part of the Vocational Rehabilitation department of the Ontario Shores Centre for Mental Health Sciences in Whitby, Ontario, Canada.

After initial discussions with the OSSEP staff, we determined that there was a need to better understand the impact of the OSSEP program in terms of quality of life and to determine if the program had the necessary design for continued growth. In the first two years after OSSEP was created, the number of students increased quickly, from about 30 in the initial year to about 80 by 2012 to over 100 today. Much of the initial services provided were done so in generally ad hoc ways. With the ongoing growth in numbers it is clear that the program needs to become more formalized with stable funding and appropriate resources and personnel. The program design follows a psychosocial rehabilitation model, which values normalization, self-determination, support and relationships, hope and recovery, and systems change and draws on the Choose-Get-Keep (CGK) model to empower participants to choose their own goals, to work within the program to accomplish them, and to keep their student status until their goals are achieved (Mowbray, et al., 2005; Soydan, 2004).

Methodology
We used a mixed methods approach in our data collection. Interviews with the students were semi-structured to allow us to collect some general statistical information while also allowing for the more open-ended responses from the participants. The interviews with staff and volunteer tutors were even more open-ended to discover impressions of the culture and the challenges faced by those involved in the program. In general, the interviews illustrated that most students, staff and volunteers felt that the program was useful, but that there was room for improvement.

For all participants in OSSEP, we asked a series of questions intended to determine if and how participation in OSSEP had impacted their quality of life. In addition, we asked questions about how OSSEP operates and what the participants thought were the best and worst things about the program. Interviews with English Language Learners (English as a Second Language -- ESL) sought to explore two additional questions: (1) What are the additional challenges faced by the mentally ill when acquiring a new language after immigration? (2) Does suffering from/being treated for mental illness significantly impede the language learning process?

Demographics of Study Participants
Of the students interviewed in the OSSEP program most were single (89.1%) men (65.2%) who are aged between 21 and 53. While twelve participants (26.1%) did not disclose their ethnic identity, almost one-third (28.3%) of the 30 people who disclosed an ethnic background self-identified as Caucasian. The remainder of the participants came from a wide range of ethnicities, including West Indian (10.9%), Black (6.5%), and South Asian (2.2%), as well as several individual participants who were Middle Eastern,
East Asian, Aboriginal, or Other. When the participants were first enrolled in OSSEP, 81% had previously completed at least some high school, with most having finished at least grade 10. Seven individuals (15.2%) had completed some college courses and one (2.2%) had taken some university courses. These statistics are similar to those of Corrigan, et al. (2008): more than one third of their sample of 120 patients had not finished secondary education, while a third had not pursued post-secondary schooling after graduating and only 12% had gone on to complete post-secondary education.

Analysis and Findings

Our analysis of the program draws on the tenets of adult education, in particular the transformative nature of adult education. Paolo Freire (1976), for example, argues that adult education helps people understand the structures that oppress them. Today, the idea of transformational learning is tied to lifelong learning, particularly in the sense that information is not static and one needs to constantly develop your understanding of new processes and structures. Adult education, therefore, is a building block of community development.

Lifelong learning can be seen as prolonging initial education; but instead, it is more about personal development, increasing one’s participation in social, economic and cultural development, and developing community knowledge to enable civic participation. (Brown and Hannis, 2012)Lifelong or transformational learning is also about improving or upgrading skills and improving one’s technical or professional qualifications (Grace, 2013; Mezirow, 1997)). In this sense, lifelong learning is important for labour market integration. In other words, without developing the skills for lifelong learning, one may be left out of real participation in both the community and the job market (Soydan, 2004; Arbesman & Logsdon, 2011).

In addition to exploring how adult education tenets can be useful for the OSSEP program, we also looked at existing programs designed to provide support for persons living with mental illness. Most such supported education programs have been designed with the ultimate goal of getting a job and are considered part of occupational therapy (Soydan, 2004; Anthony & Unger, 1991). Other supported education programs are tailored to assist students enrolled in vocational certificate courses (such as horticulture and hospitality) (Best, Still, & Cameron, 2008; Mowbray et al., 2005). While preparation for integration into the job market is important, we argue that the benefits of supported education to general quality of life, including the ability to manage one’s own finances, read for enjoyment, fill out forms, and the like, should also be considered. In other words, supported education programs must include those patients who may not have the goal of attending a post-secondary institution or attaining a job that requires a relatively higher level of education.

One of the theories we think is important in understanding how supported education benefits adults living with mental illness is Sen’s concept of capability deprivation. For many OSSEP participants, their ability to develop their capabilities has been hampered by a lack of education and access to literacy and basic skills training in the past. Sen’s (1999) perspective is important for this study because it takes into consideration not simply the functional ability to earn an income; it also encourages attention to the “ends that people have reason to pursue, and, correspondingly, to the freedoms to be able to satisfy
these ends” (p. 90). In other words, education is not only important for attaining a job, but also to live life as a free individual or, in other words, to have the freedom to develop well-being. Without that freedom to live a good life, one experiences "capability poverty". We believe that supported education programs provide one important step towards building those freedoms. To understand this concept, think about a person who might have a resource, like a book or access to the internet, but if that person does not know how to read or how to find information (and to be able to determine what is good information), s/he cannot convert the resource into a valuable functioning which results in capability deprivation. In this concept, what is defined as “well-being” is subjective. In other words, while some people might aim for a higher education, others aim to finish high school or to simply be able to do their own banking without assistance or read for enjoyment. It is clear that supported education has a positive impact on quality of life: access to education benefits persons living with mental health illness at the very fundamental level of being able to participate in and enjoy life independently. As previous research has found, participants in supported education programs often experience an identity transformation from patient to student, an increase in aspirations, and a sense of personal empowerment.

Barriers and Motivations
Our research identified a few consistent, self-reported barriers to education and motivations for attending OSSEP. In terms of barriers, many of our participants had negative educational experiences in the past or had left school before graduating or had attended sporadically for a variety of reasons that they currently regretted. About half of the participants identified their mental illness as holding them back from pursuing the education they wanted. About a half of the participants identified learning disabilities as a barrier. In the interviews, we probed to determine whether or not these were documented learning disabilities – most were documented according to the participants, but we had no way of checking documentation due to the privacy rules. Social isolation is also considered a barrier; research on goal setting, for example, demonstrates that having social connections, such as friends and relatives, help individuals to achieve their goals (Urdan & Maehr, 1995). It is no different here – having a sense of community in the learning environment can be helpful in encouraging students to come to the program and persist in seeking to achieve their goals. A few identified their medication as being a barrier, but others noted that their medication was helpful in paying attention and being able to think clearly. Finally, some people stated that, until they found the OSSEP program, that it was not easy to find programs that were suitable for persons with mental illness; the OSSEP program is not well publicized and is even difficult to find on the Ontario Shores website, so unless one is already involved in programs at Ontario Shores, many might not know about the program or how to access it. Our preliminary investigations about other programs across Canada have demonstrated that supported education programs are relatively unique in Canada and not easy to find.

In spite of the barriers faced, many of the interviewees identified their motivations for taking part in OSSEP. Most of those we interviewed were motivated solely by educational goals of upgrading or completing high school credits or wanting to become better educated on particular topics. Most other hospital-based education programs, including the commensurate one at Toronto’s Centre for Addiction and Mental Health (CAMH), are linked to employment; among the participants at OSSEP, employment
goals tended to be somewhat vague. Employment goals were often general statements about wanting to work at Walmart or a similar store. A few had more specific goals, such as becoming an electrician or to find work in another trade. Interestingly, everyone who was interviewed indicated that they attended OSSEP because they wanted mental stimulation.

The program has worked well to encourage and support adults desiring education for vocational, academic or independence goals. Self-reported improvements in reading, writing and math skills, as well as in self-confidence and independence have been recorded. Our interviews showed gains in confidence among 85.7% of the respondents and a sense of increased independence among 81% of those interviewed. We believe that this is the result of the main strength of this program – that the program creates a learning culture that increases students’ confidence and corresponding feelings of independence.

While less than a quarter (23.8%) of those interviewed felt that they had reached their educational goals, almost three-quarters (73.8%) felt that they would eventually reached their goals. But the staff and volunteers also have to walk a fine line between keeping participants motivated while also ensuring that their goals are realistic. So, the program is also about educating participants about the reality of their experience and their level of skills. There is a need to maintain a sense of hope and to encourage persistence by setting goals that are attainable (Hoffmann & Mastrianni, 1993; Leonard & Bruer, 2007; Unger, 1993; Bellamy & Mowbray, 1998; Corrigan et al., 2008; Isenwater, Lanham, & Thornhill, 2002; Mansbach-Kleinfeld, Sasson, Shvarts, & Grinshpoon, 2007).

It is clear that having a supported education program that can cater to individual needs is having a positive impact on students. We note, however, that these are self-reported feelings. On the one hand, we wonder how much more independent the participants are in everyday life; on the other hand, however, the fact that they are feeling more confident and independent is important to both healing and for the possibilities for future success – these feelings help in creating a sense of hope among the participants. However, as the popularity of the program has begun to increase, we can also identify the need for a more structured organization of the program and for the implementation of adult education models of pedagogy.

ESL participants

Our research sample included five immigrants who took part in OSSEP’s ESL class, three of whom were currently in-patients. The two out-patients had been treated previously at the hospital, but were living in their community at the time of their interviews. Hospital staff recommended participants who met the research criteria of 1) being diagnosed with mental illness, and 2) being immigrants whose first language was other than English. All participants were enrolled in English as a Second Language (ESL) classes through the hospital’s supported education program.

The group was comprised of four men and one woman, whose mother tongues were Chinese, Tamil and French. Three participants were single and two were married (to each other), and ranged in age from 24 to 56 years old. The three in-patients had been living in the hospital for an average of four years and two months. The two out-patients had each sought help for mental illness within the previous year. The
participants had been living in Canada for an average of 12 ½ years, within a range of 3 to 19 years. All but one is or has been employed in Canada. What is interesting here, is that all five participants had the four facilitative factors for second language acquisition (SLA) (Larsen-Freeman & Long, 1991) that would lead one to expect that they would all have been much more successful in acquiring English language skills than they were. Despite receiving ESL instruction in the hospital’s supported education program (enjoying the ESL classes and speaking very highly of the teaching staff) and meeting many of the theoretical, demographic and circumstantial criteria for expedited SLA, this group of individuals had not moved through the stages of second language acquisition as quickly as SLA theory would predict.

Immigrants experiencing the isolation and stigma of mental illness are often further removed from access to the neighbours and neighbourhoods that would enable them to achieve the level of language proficiency required for cultural competence and for reaching their educational and occupational goals. One possible explanation for this anomaly is that they were being impacted by their affective filter (Krashen, 1982); this theory suggests that those who experience negative emotions such as anxiety and stress, may be prevented from successful language acquisition.

Access to supported education that is aimed at English language learners (ESL) is key to ensuring that those immigrants who are living with mental health issues are able to be integrated as fully participating members of Canadian society. Indeed, Principle 13 of the United Nations Principles for the Protection of Persons with Mental Illness and the Improvement of Mental Health Care requires that those living in psychiatric hospitals have access to the living conditions of the same standard as in the community, including education facilities and vocational training. For immigrants being treated for mental illness, this means that access to ESL classes is required.

Conclusion and Recommendations

Ontario Shores uses a Recovery Model of Care: empowerment, hope, recovery, collaboration, identity, responsibility and meaning in life. The model builds on the current care model through a holistic patient-centred approach. It combines medical, rehabilitation and psychological perspectives in the treatment of mental illness. The shared journey promotes inclusion and empowerment of patients and treatment options that are tailored to the individual needs of patients to support their well-being. Many patients with mental illness need the most help with socialization and how to behave in an educational or work environment. Participation in OSSEP provides a structure which, for many, is important for day-to-day functioning. Some participants experience an improvement in their skill levels, but we suggest that there needs to be more transparency for individuals to be able to better track their own progress through checklists or other tracking mechanisms so they can be more aware of their day-to-day progress.

Our preliminary findings reflect those of, for example, Gibbons, et al. (1980) who found that adult self-learners are better able to gain control over their lives because they develop perseverance, self-discipline, and self-confidence. Our research extends and reinforces this finding in its focus on the impact of education on adults living with mental illness. Given the similarities between supported education and adult education, and that one in five adults experience mental illness, our research can add depth to adult education programs.
Our research also indicates that the relatively ad hoc style of programming has worked when there was small enrolment and few staff, but we believe that the program can become more successful by implementing well-tested methods of adult education pedagogy and using adult education curricula, as well as by ensuring that there is adequate funding for access to appropriate resources and personnel. Finding staff who are trained in both adult education pedagogy as well as in the mental health field is particularly challenging, but will be important if the program is to continue its success and growth.

Our main recommendations for OSSEP are:

1. **Adult Education Protocols**: In order to improve the quality of the program, we recommend that the OSSEP be redesigned around the well-established adult education models in Canada. Since there is well-documented evidence that demonstrates the importance of using age-appropriate education materials for adults, we recommend that OSSEP use the Literacy and Basic Skills (LBS) program and curriculum. By linking with the Ontario LBS program, students will be better able to enter community-based programming. In other words, since the LBS program is recognized across the province, the achievements of OSSEP participants will be transferable.

2. **Integration**: In order to improve the consistency of what is taught to the students in preparation for the workplace, we recommend clearer connections between the job training and education sides of Vocational Rehabilitation.

3. **Assessments**: Based on the research conducted and the requirements of OSSEP, we recommend a selection of assessment tools that are most appropriate for the specific requirements of OSSEP clientele as per the suggestions of our literacy consultant.

4. **Professional Development/Training**: In order to improve the quality of the program and to ensure the success of the students, we recommend that current and incoming staff and volunteers be trained in adult education methods of teaching and curriculum. Affiliation with an LBS agency will allow for easier and regular access to adult education training for staff and volunteers.

5. **Monitor & Modify**: Establish a protocol for both staff and volunteers to use that will allow for monitoring and modifying individual programs. Monitor participant progress through course work, with attention to the amount of work completed, grades on assignments and tests, and clinical evaluation of comprehension of content. Modify tasks, if necessary, based on observations by providing and/or removing additional supports, changing to a more appropriate course, subjective analysis of performance by client, and reviewing progress through success criteria.

6. **Intake Assessments**: When students are first recommended to the OSSEP program, we recommend that assessments include a risk assessment, analysis of learning style, creation of a sensory profile, and a determination of positive and constructive feedback preferences. In addition, participants should set productivity objectives that include both short-term and long-term goals. Part of this assessment will determine which stream or program the client will undertake (i.e., pursuing high school credits for further education, vocational training or personal satisfaction or upgrading academic skills for work or greater independence).
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Abstract:
Communication is neither distinctly human nor simple. 21st century language demands precipitated by standards, evolving careers and changing academic landscapes transcend disciplinary, sociocultural and geo-technologic borders in unimaginable ways. In the cross-hairs of these demands are youth whose technology-dependent lives have limited their access to communication forms and styles accepted as mature and/or professional. A product of program evaluation, CAP is a tiered approach to writing using media and mobile technologies to engage novice writers at all levels. Workshop participants will have opportunities to use the model to develop compositions in real-time.

Introduction
Imagine “code switching” as a “frontier of race culture and ethnicity”. A message projected by an NPR blog on the topic, young writers are expressing thoughts on significant issues that often do not get associated with youth culture. It would be a mistake not to contemplate the ‘power of the pen’.

All writing should be viewed as a potential point of academic support. In response to the identified needs of improved language literacy and communication skills resulting from program evaluation of curriculum development and professional development at an urban site, a strategy for writing instruction was developed that utilizes Common Core principles and techniques for college-level writing.

Program Evaluation Notes
The first round of assessment exposed a critical instructional need; students may need additional support for developing short constructed responses to document-based questions. A random sample of student responses across grade levels and programs reveals three growth areas in student writing:

1) Attendance to expectations of bounded, timed writing tasks
   a. Bounded writing tasks are a measure of students’ ability to respond to a specific prompt or question
   b. Timed writing tasks are a measure of students’ raw, unrehearsed ability to write under pressure

2) Academic vocabulary

3) Fluency of thought conveyed through
   a. Writing conventions
   b. Word choice

In the short-response questions, curriculum specialists reported student complaints about not having enough space to answer questions. The 250-word limit presented significant problems for several students. One population found the limit too constrictive and wanted to write in more
than 250 words. Samples reveal that students readily went off task and/or included too many words from the original source document, usually without quoting or organizing the composition in a way that demonstrated understanding or assimilation of the text.

Another population struggled to develop a composition that had at least 100 words. In many cases, the latter responses were filled with unnecessary filler words and lacked full cohesion or did not fully address the task.

The writing process elevates voice and agency above product. Ultimately, writing becomes an experiment, a source of personal inquiry, that empowers the writer, without regard to the amount of time it takes. Among the rewards of pre-writing, writing and rewriting for students are the revelation of personal truths as they emerge (Murray 1972) and improved writing proficiency (National Center for Education Statistics 1996).

CAP Writing is a tiered approach to the writing process that supports the COMPASS framework—the program also developed as a result of program evaluation—for teaching excellence in formal out-of-school contexts. COMPASS is a set of observable indicators that benchmark teaching actions that lead to college readiness according to a range of research that includes the work of Danielson (Framework for teaching), Hattie (Visible learning), Ladson-Billings (Culturally relevant teaching) and Marzano (High-impact teaching strategies).

Overview

What is CAP writing? CAP writing is a tiered approach to the writing process. Developed in part to address the needs of reluctant writers, it acknowledges learning style preferences that are oral in nature and attentive to cultural norms and traditions that are based in spoken word. CAP is a celebration of self in the process of writing. Empowered to incorporate patterns and principles from familiar cultural norms, the CAP process begins with speaking, moves to listening, then reading before writing happens.

![Figure 1. Steps of CAP Writing Process](image)

CAP is an acronym that is used differently depending on a learner’s position in the writing process. It enCAPsulates elements of the traditional view of writing while existing within a framework for formal out-of-school learning context for college and career readiness (also described as the COMPASS framework for learning).
Table 1. CAP Writing Process: Comparison of traditional and novel approaches

This view shows a traditional view of the writing process. It does not necessarily allow writers/learners to see themselves in it. This traditional view is a social capital view because it is a tool that dominant cultures use to engage learning and communication. The reality is that I am advocating for structures that will be functional for students who struggle in these learning contexts.

The social capital view does not fully engage learner’s being. The learner’s voice, rhythm and vernacular are not allowed to roam free in a social capital view of writing because it is regulated by rules and conventions (e.g., rigid standards) of communication with and for the dominant culture.

A cultural capital view of the same process celebrates these three elements. Enabled by apertures between micro-level (personal) being, meso-level (community) being and macro-level (societal)
being, students learn to cross borders without losing themselves. They are able to stay engaged because complete assimilation (loss of identity) is not required. The notion of cultural relevance takes on important and nuanced meaning in this cultural capital view as code-switching (a specific type of border crossing) is not only allowed, it is expected.

The embedded elements of micro-level being (like speaking patois, Creole and Spanglish) allow the learner to honor the voices, the vocabulary and the cadence of the familiar—it is respectful of family, friends and self. Border crossing into the meso-level orientation, is slow and requires trust but it is still respectful of familiar spaces. By the time a learner is able to cross into macro-level being, the learner is sufficiently able to “code-switch” gauging appropriateness while still being secure enough to share elements of his/her micro-level self.

A view from the literature & insights from others’ work

Oral language competency is distinguished from literacy in “literate societies where reading and writing are critical to the daily function of its members” (Benson, 2009). Because oral language competence is viewed as compulsory and highly rudimentary, in many ways oral language traditions are diminished among the skills that are viewed as valuable in schools. Gone are the days when meritocratic distinction was given to orators for speeches and narration. The consequence (perhaps unintended) of this denigration of such is the excisement of large groups of people (mainly from nondominant and multilingual communities) from the populations of students seen as “smart” in schools.

Reading and writing have been given significant emphasis in school settings in spite of the triangular relationship in literacy that regularly plays out in school settings—formal and informal. The relationship between reading, writing and speaking can be seen in most K-12 curricula. Emphasis on these three literacies (or ways of demonstrating literacy) have had a profound impact on the way children are taught and evaluated. An example of instructional time allocation data for elementary grades is provided below. As expected, mathematics and English take up the greatest part of the school
day. Increasingly teachers have to find ways to apply these two core disciplines in the others—an example of which can be seen in the Common Core standards. As a point of clarity, I believe in the Common Core and like their organization. Nevertheless, I understand that it is incomplete and if used in inappropriate ways to evaluate students, it could be a very dangerous document.


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Conceptual framework

I believe strongly in a “CERO or ZERO” principle. It is our responsibility as academics (or really thinking, literate citizens) to confirm, extend and refine others’ works if we are to rise above a zero-sum reality. In the end, we should be gaining from the work of previous generations not just breaking even. With that principle in mind, CAP writing builds on the fundamental view of literacy as evidence of a person’s ability to read, write and speak. It elevates listening as a critical skill and honors thought in ways that are uniquely personal and community relevant. Although speaking is expected in academic literacy environments, it is somehow always in the background when it comes to evaluation. For that reason, it is shown here in gray.
Figure 4: Fundamental literacy: foundations in reading, writing and speaking

The fourth dimension of literacy, listening, adds a depth that is missing in a triangular model of language literacy. Conceptualized here as an evolution from three points of engagement to four, the model for expanded, culturally responsive literacy is symbolized as both a "literacy circle" and a "literacy pyramid".

Figure 5. Literacy tetrad: two connected dyads

A circular representation of the four literacy domains shows the foundation of literacy skill development. When we problematize this foundation, one path to solution might be the Common Core Standards. In the Common Core documents for English Language, students are asked to “read stories and literature, as well as more complex texts...stressing critical thinking, problem solving and analytical skills” (CCSSO, 2014). Scrutiny of grade 9-10 standards for example reveal that there are nineteen reading standards (literature (10) and informational text (9)); ten writing standards and six language standards. The language standards include conventions, vocabulary and general knowledge about language. Thankfully, the Common Core realizes the importance of speaking and listening as well. However, there are only six standards total that address the speaking and...
listening dimensions of language literacy. Covering areas of “comprehension and collaboration”, discussion, information processing and analysis of speech embody skills in the first three standards—a convergence of both speaking and listening. “Presentation of knowledge and ideas” frame the second three standards in this category. Geared only toward speech, this set provides insight into our beliefs about speaking and how it can/should be positioned in schools.

An intentional “play” on the concept of literature circle or literary circle described well in the literature about language development, a “literacy circle” uses the natural complements of literacy dyads (speaking-listening and reading-writing) and places them in context for students. In this model, all four competencies are treated equally. As ideal as this might sound, this is not the reality of school literacy programs nor should it be. Equal distribution is not usually equitable when it comes to human development and conventions.

An alternate conception of this model incorporates the additional depth of understanding and cognition required by active listening. The pyramidal view of these four elements expands thinking about literacy to build on language using cultural norms, media, information and visual cues. It lifts listening to a higher status. Of the four standards, it is probably the more socially challenging thing to do but will likely yield the greatest outcome toward critical thinking. When listening skills are cultivated, there exists a larger potential for critical thinking and analysis.

![Figure 6. Literacy pyramid: Elevating critical literacy skills with engaged listening](image)

Listening is an important discipline and habit to develop in people. Simple and yet taken for granted, strong listeners generally know how to cooperate/collaborate well with others. Here is a list of characteristics I believe to be true about strong (engaged) listeners.

- Strong listeners are often able to organize streams of thought well and ask deep level questions to discern a speaker’s perspective;
- Strong listeners process information and judge it slowly. Even if what a strong listener is processing elicits an immediate reaction, s/he typically waits to respond;
- A strong listener hears and reads nuances in voice or text and is able to categorize each and critique them separately, in tandem or in whatever way is appropriate;
A strong listener picks up on background “noise” that may shape the text, the place, the space and ecology. Listening requires more than just hearing, but feeling and interpreting. Attribute lists abound as it relates to listening (Bonura, 2003; Campbell, n.d.) however at its core, listening should be a normalizing standard of good communication and literacy. It also may be an important source of self-efficacy. Having the ability to hear and process well, a strong listener can anticipate outcomes and build understanding. This enables the negotiation of borders from personal (micro-level) thinking to larger systems of thinking (meso- and macro-level).

**Techniques: Transcription & Variations of Text**

Peterson-Karlan (2011) issues an important challenge to those of us using various technologies to enhance learning experiences for children, especially those with identified special needs, in areas of compositional writing. Describing specific issues with narrative and expository writing, Peterson-Karlan acknowledges the dilemma that teachers face when asked to evaluate students who are differently able to write (communicate).

“...[the narrative writing of] students with learning disabilities reflects a paucity of ideas that prevent them from embellishing their narratives and, as a result, produce qualitatively perfunctory stories that may not meet the minimal requirements for a story…” (p. 42)

In terms of expository writing, the writing of students with learning disabilities generally reflects:
- less knowledge of steps of the writing process, including the relevance of planning
- less knowledge of the structure of various expository texts
- more mechanical errors, irrelevancies, redundancies
- a lack of coherence and organization
- fewer procedures for generating, selecting and integrating information from multiple sources
- fewer strategies for organizing and presenting ideas including modeled strategies

**Notable Side-Bar: The Reading Analogue to CAP Writing**

In full acknowledgement of the cognitive relationship of writing and reading, a model for CAP Reading is being developed in collaboration with Pamela Joyce, Ph.D. ([http://www.911educator.com/](http://www.911educator.com/)). Figure 5 shows the dyadic nature of reading and writing; we firmly believe that if you read, you write. If you write, then you read. As is the case with CAP Writing, CAP Reading provides multiple and varied opportunities for members of non-dominant cultures to code-switch, build their reading self efficacy and develop the necessary academic habits and skills to gain access to dominant/universal language communities. Common Core and PARCC emphases on informational texts (especially in science and social studies) may provide an additional opportunity for reluctant learners to use CAP strategies to “read between the lines” and process complex information in ways that are meaningful to them. If learners’ habits are to seamlessly switch between familiar and unfamiliar words and ideas (for example) using their own voice, rhythm and vernacular, they may build the confidence to “translate” a range of complex texts rather than give up on the process altogether (Peterson-Karlan, 2011).
Many of these descriptors accurately summarize challenges that urban teachers see in the writing styles and preferences of students from non-dominant cultures. I believe that two underutilized techniques can be used to build students’ writing (literacy) skills while also building their confidence: transcribing personal speech and developing variations on previously published texts embrace aspects of personality that otherwise may never be leveraged.

**Transcription** is described in the literature in various ways, usually related to the manual development of writing (putting pen to paper). There are various assistive technologies that have been reported to help students. Our use of the term “transcription” is for the task of listening to spoken words and typing/writing based solely on aural skills and processing. Without any editing, students’ composed text is spoken and then transcribed.

**Variation** is a technique that allows writers to model their own composition after others’ works. The works that are usually referenced are musical but can also be linguistic adaptations of non-linguistic models.

My first experiences with each technique helped me to truly understand their potential to transform my own “writers’ block” moments. I discovered the utility of transcription while conducting research with a participant who did not agree to be recorded—I would capture my own reflections and recollections on a mobile voice recorder which allowed me to actively participate. Transcripts were later member-checked for accuracy further allowing me to build trust within that space. Variations were something I learned to do in college. Poetic license and freedom to use original texts as much or as little as I wanted helped me develop a repertoire of styles.

A traditional view of the writing process shows key components of writing. CAP writing is a systematic approach to this process that reminds writers/learners to check for their own understanding metacognitively.
Figure 8: Traditional view of writing process

Image available online at http://upload.wikimedia.org/wikipedia/commons/0/03/Writing_Process_Flow_Chart.gif

Strategies within the model: Closer examination of each tier

CAP Writing is a tiered approach to writing that reminds the learner (writer, student) to do three things at every phase of the writing process. Each “thing” is represented by the letter C, A or P. Full description of each element is elucidated here (Refer to Table 1.).

Tier 1: Academic habit formation around use of essential questions

In 2000, Wiggins and McTighe first introduced the idea of “essential questions” with their volume Understanding by Design. The basic tenets of that seminal work has transformed the way curricula are developed in all content areas. Essential questions themselves are simply important questions that are generated in a range of authentic learning contexts. From the point of view of CAP, there are three questions that every learner should ask before venturing into the territory of communication. Communication is an active response to thoughts or ideas; in school, academic and professional settings, these responses are articulated in spoken words/texts or written/papers.

Tier 1 CAP: Key Questions

- **What Content** domain do I want to explore in this text/paper?
  
  Since there are so many ways that ideas can be bridged, giving a learner the flexibility to first discuss ideas using any discipline they prefer (at first) is important to stimulating creativity. When a student is asked to focus on content over language, barriers to the writing process have been shown to come down for students—making the process fully interdisciplinary and without the expected challenges associated with emergent literacy. A key example exists simply in the explanation of ecology. If a student wants to write about ecological relationships from a natural science perspective, the ideas s/he conveys may be different from those if approached from a social science perspective. What will likely remain the same is the vocabulary that the writer uses.
Who is the primary Audience for this text/paper?
An important aspect of code-switching is the development of an internal monitor of appropriateness. As a teacher, I have always wanted my students to distinguish between formal and informal writing styles. Knowing the audience for which a text is being composed is important—writing/speaking for a job interview is different from writing/speaking about a job interview. Writing/speaking to friends, is different from that which is designed for family (especially elders) and employers for example.

What is the Purpose of this text/paper?
Making learners aware that it is okay to write to be funny is important. As a teacher I found that students how are reluctant to write often assume that the only purpose for writing is for evaluation. NOT SO!!! Sometimes it is simply cathartic to write with your own reflection in mind.

Once barriers (blocks) are removed around these three questions, it is generally easier to do the hardest part of writing—get started!

Tier 2: Meaning-making around language development
Once a learner has utilized the techniques outlined in CAP (whether by transcribing personal speech or by doing a variation on others’ work), it is important that the learner “clean up” their first thoughts and impressions and begin the process of internalizing or modifying so that others understand the intent. In order to do this, the learner must attend to the language that he uses to communicate ideas. In tier two, learners are able to build vocabulary and employ the “CERO or ZERO” principle. In tier two, writing becomes more like science than art and learners gain access to inquiry practices that can sustain long-term learning rather than the common trap of writing activities that end when a bell rings. In tier two, scholar identity, is developed and learners become empowered to ask questions, make observations and interact with other thinkers about ideas that may have at first seemed invalid. If learners are in fact going into uncharted and unconventional linguistic territory, tier two is an opportunity to develop an argument about one’s ideas or modify one’s thinking.

Tier 2 CAP: Language development—standard and nonstandard considerations
- **Concise language**: if in reviewing a recording or transcript a learner hears (or sees) that they are rambling, s/he has an opportunity to scale back and remove unnecessary or tangential words or ideas
- **Authentic language**: if in reviewing a recording or transcript a learner has used incorrect or made-up words (e.g., conversate, irregardless, whatchamacallit, thingamajig, lol, smh and other text-lingo), s/he has an opportunity to conduct content-specific research to determine appropriate vocabulary and examples from the field of study
- **Precise language**: if in reviewing a recording or transcript a learner has used words that while correct fall short of rich description, s/he has an opportunity to vet ideas with a peer or authoritative collaborator and add complexity to the writing. This is also an opportunity to re-write with the assistance of technology or writing tools

Tier 3: Organizing text for presentation
Tier 3 is about re-casting the revision process. To re-cast is to allow new shapes to be molded from a long-standing form. The writing process is itself a long tradition in school settings. Unfortunately, if the goal of curriculum implementation for this process was to narrow gaps between students, it has not been realized over the last fifty years of reporting. Several generations of students have been
subjected to various forms of the traditional model for the writing process and yet, performance data has not changed significantly. I admit, this is another theoretical model for the process however there are early indications of success with urban students. Tier 3 is about the revision process. It asks/expects learners to think about sharing ideas for others’ feedback. In keeping with oral traditions, it is expected that in Tier 3, learners have opportunities to “perform” in the safety and sanctuary of shared spaces, with people they trust (micro- and meso- level networks) so that they can move to share with others (in larger social contexts). In the first sharing, they have opportunities to be affirmed and corrected, build independence and autonomy, create additional compositions and realize their own scholarship.

**Tier 3 CAP: “Write” conventions**
- **Capitalization**: checking for mechanical errors
- **Application**: checking for broader applications and connections beyond self
- **Punctuation**: more checking for mechanical errors; embellishments using a range of punctuation beyond periods, commas; using style guides to cite others’ works appropriately

**Works Cited**


This work will be presented at the Hawaii International Conference on Education (HICE) in January 2015. Lesson plans are available that show how teachers can use these strategies in secondary classrooms. A manuscript is in preparation that details this work. Please respect the process and do not distribute or share without permission from the author.
Title: Communities of Learning to Cultivate Belonging in Blended Learning Environments

Topic Areas: Higher Education, Adult Learning

Workshop Description: This session will explore the sense of belonging that can result from the intentional cultivation of learning communities in a blended (online and face-to-face), adult learning classroom environment. Drawing from the authors’ experience teaching in a Canadian Master’s of Arts in Leadership Studies program for mid-career professionals, we will experientially share diverse options for experiencing community that allow the possibility of belonging for everyone—both students and faculty alike.

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Cultivating Belonging: Living Leadership in Communities of Learning - References


Preparing for High Risk Low Frequency Incidents on College Campuses

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Abstract

Active Shooter Incidents (ASI) are a reoccurring and all-too-familiar trend in the United States. The role of Institutions of Higher Learning (IHL) administrators is vital to the overarching preparation of policies and procedures for an effective response to ASIs. IHL administrator’s support of Educational Law Enforcement is marginal; partly due to political power structures within the Universities. Due to the increasing awareness of the consequences of an ASI, it is becoming more apparent that the IHLs must be better coordinated to prepare for High Risk Low Frequency Incidents.
Dedication

This research is dedicated to my partner and friend, Keith Lawrence, an Officer at the University of Southern California Department of Public Safety. Keith and his finance Monica Quan, were brutally murdered by the deranged Urban Terrorist, Christopher Dorner, on February 3, 2013 in the parking garage next to their apartment at Concordia University in Irvine California.

Dorner’s cowardly acts truly speak to the theme of this research: it is not “IF” an Active Shooter happens it is “WHEN.”
**Problem Statement**

Institutions of Higher Learning (IHL) political power structures have historically had an impeding effect on Educational Law Enforcement. As High Risk Low Frequency incidents such as Active Shooter Incidents, become more prevalent, funding to improve the capabilities of Educational Law Enforcement is necessary to meet the threat.

**Active Shooter Defined**

An Active Shooter is defined by the U.S. Department of Homeland Security as:

"An individual(s) actively engaged in killing or attempting to kill people in a confined and populated area; in most cases, there is no pattern or method to their selection of victims."

**Active Shooter Incidents in Institutions of Higher Learning**

The fear of an Active Shooter Incident (ASI) continues to be a focus of many IHL administrators; the ability to adequately prepare and respond to an ASI depends upon the capabilities of educational law enforcement personnel. This researcher found a lack of peer reviewed literature on decision making, problem solving, and solutions for ASIs for university campuses around the United States. This is surprising as ASIs are a reoccurring and all-too-familiar trend on college campuses in the United States (Schweit, 2013, p. 1).

In the FBI study, *A Study of Active Shooter Incidents in the United States Between 2000 and 2013*, the FBI researched 160 Active Shooter Incidents over the last 14 years, this research indicated 24.3% of the ASI’s were in educational settings with 24 ASI incidents in schools and 12 incidents in IHL’s (Gray, 2014). The FBI study also revealed a developing and disturbing trend; in the first seven years of this study, 2000 to 2006, there was an average of 6.4 incidents per year. However in the last seven years, 2007 to 2013 the number of ASIs increased to 16.4 ASI incidents a year (2013).
To properly prepare for critical incidents on college campuses; educational law enforcement agencies must have the unwavering support of the IHL administration. This will require a significant culture shift for most IHL administrators. To prepare for High Risk Low Frequency Incidents, IHLs need to professional equipment and training for Educational Law Enforcement.

As a practice, Educational law enforcement has been shown to be under funded and under trained to adequately respond to High Risk Low Frequency Incidents (Wagner, 2010, p. 165). To improve public safety on college campuses, it is essential that IHL administration implement a constructive process to improve Educational Law Enforcement capabilities.

The increasing need for financial resources require the understanding of IHL power structures to ensure that public safety is properly funded. To ensure there is adequate funding, IHL and educational law enforcement executives need to collaborate when developing budgetary needs for the public safety issues on campuses (Shockley-Zalabak, 2011, p. 52).

The cost of hiring and equipping law enforcement personnel, as well as the training required to develop increased capabilities, are at the forefront of the Active Shooter topic. In Dr. Lee Wagner’s study; “The Levels of Authority Among California Community College Police Chiefs,” he identifies issues that continue to limit the ability to prepare for active shooters on
PREPARING FOR HIGH RISK LOW FREQUENCY INCIDENTS ON 6 campuses. Wagner found public safety budgets were consistently a low priority in California Community Colleges. Wagner’s study suggests these budgets favor instructionally oriented resources (Wagner, 2010, p. 163).

**Active Shooter Threat**

Active Shooter Incidents are on the rise with 160 incidents between 2000 and 2013, an average of 11.4 yearly (FBI, 2013, p. 6). Other FBI research indicates the rising ASI trends between 2007 and 2013 have increased to 16.4 incidents per year (Gray, 2014). This FBI research is disturbing. However what is more distressing is the reality that an active shooter suspect shoots someone every 15 seconds (Perry, 2009, p. 1). When preparing budgets, IHL administrators should recognize these statics as a stark reality and fully understand the significant consequences of not preparing educational law enforcement to respond to High Risk Low Frequency incidents.

Table 2
IHL administrators need to have a straightforward conversation with their public safety executives to determine if there is appropriate staffing levels and equipment to respond to critical incidents. A vital topic that needs to be discussed is that the lack of capability to respond to ASIs will result in increasing student, faculty and staff deaths.

Educational law enforcement experts agree that the lack of resources and personnel are the major factors in the capability to effectively respond to critical incidents (Wagner, 2010, p. 163). With over 4000 IHLs serving nearly 16 million students, campus safety has never been more important in today’s college communities. The inclusion of educational law enforcement executives in the preparation of IHL budgets will improve campus safety funding, resulting in an increased level of professionalism in campus law enforcement (Wagner, 2010, p. 18).

Political Power Structures in Institutions of Higher Learning

Wagner’s research indicates professional relationships between IHL and educational law enforcement administrators must be better developed to ensure the capability to respond to High Risk Low Frequency incidents. Moreover, there must be an unequivocal partnership between the IHL and educational law enforcement administrators (Wagner, 2010, pp 164-166).

Unfortunately and all too often, public safety is poorly equipped and has inadequate training (Wagner, 2010, p. 164). This limiting factor does not allow educational law enforcement the ability to effectively train for or respond to High Risk Low Frequency Incidents.

Wagner’s research found IHLs rely on the local police for critical incident responses; further the poly-centric power structure of IHL administrators does not understand the authority needed for Educational Law Enforcement to effectively respond to critical incidents. Moreover, Wagner’s study identified that IHL administrators work against the implementation of
communication practices that would give educational law enforcement the financial resources to effectively respond during campus emergencies (Wagner, 2010, p. 164).

Relying on local police to be the primary responders to High Risk Low Frequency Incidents on college campuses is inherently flawed. Local incidents such as civil unrest or natural disasters require municipal police assets to handle such emergencies. This will cause a delayed response to the college community if they also experienced an incident. As a result, in civil unrest or natural disaster incidents, IHLs will be left to handle emergencies with limited or no municipal police assets, and campus public safety officers would be the first responders.

This researcher experienced this phenomenon firsthand during the Los Angeles Riots in 1992 while working at a university in Los Angeles. During this crisis, LAPD was fully deployed on a Tactical Alert and did not have the resources or manpower to provide protection to the university. The security and protection of the university was left to the university’s Department of Public Safety.

Fortunately the campus escaped the riot with little to no damage as the Public Safety Officers met the challenge during that crisis. However, the lessons learned from the Los Angeles Riot in 1992 inspired significant change in that department; including a bigger budget, more manpower, additional training and resources for the Officers.

This type of reaction is typical with IHL administrators. Often, campus politics and apathetic voices concerning public safety, dominate the conversations when discussing Public Safety budgets. It is all too common that it is only after a critical incident, will IHL administrators support the budgetary needs of educational law enforcement (Wagner, 2010, p. 165).

**Impact of a Critical Incident**
PREPARING FOR HIGH RISK LOW FREQUENCY INCIDENTS ON CAMPUS

The publication of the Jeanne Clery Act provides greater awareness of crime on campus. The Clery publication highlights the need for emergency preparedness to deal with emerging threats (Walters, 2013). The Clery disclosures, combined with frequent media reports of ASIs continue to have a negative impact on some Colleges and Universities ability to recruit and retain students.

The FBI found in its research, Active Shooter Incidents happen in small, medium and large campus communities. Moreover, ASIs occur in all economic areas and no campus is immune to the potential of an ASI (Schweit, 2013). A very disturbing trend shows that between 2006 and 2013, the frequency of ASIs have increased with an average of 16.4 incidents per year (Gray, 2014); emphasizing that it is not if an Active Shooter will happen, it is when.

**Active Shooter Profile**

The challenges of identifying Active Shooter suspects prior to an incident are concerning. FBIs research indicates a profile on Active Shooters does not exist. Therefore, we are unable to criminally profile potential active shooter suspects. Inasmuch, ASIs have the potential of occurring in any campus, in any community, at any time (Schweit, 2013).

The immediate response to an ASI is paramount to educational law enforcement’s ability to protect the campus community. The appropriate preparation and training for campus public safety professionals require IHL administrators to fully understand the consequences of not preparing for an ASI. With the understanding that statics indicate an active shooter shoots a victim every 15 seconds; funding, training, and resources for public safety is vital to mitigate the loss of life during an ASI.

The ASI at the University of Florida (FSU) on November 20, 2014 is an example of how the loss of life can be limited. In the FSU ASI, the shooter was engaged and neutralized by the
campus police within two minutes of the initial call; the response of Campus Police limited the injuries to three victims. Considering the suspect was reported to be mentally unstable and was randomly shooting students in the library during peak hours, the situation could have been much worse without immediate intervention by campus police (Cotterell, 2014).

**Institutions of Higher Learning Responsibility**

IHL administrators are involved in planning, organizing, directing, controlling and evaluating activities of departments within the Universities including educational law enforcement. IHL administrators are also responsible for the budgetary support, leadership and oversight of campus public safety departments (Wagner, 2010).

Perception of campus public safety is not consistent within educational law enforcement departments. Some agencies enjoy a positive relationship with IHL administrators, while others have a less than desired relationship. In Dr. Lee Wagner’s dissertation titled *Levels of Authority Among California Community Colleges Police Chiefs Regarding Active Shooters on Campus*, Wagner found that levels of authority were inconsistent among Community College Police Departments (Wagner, 2010, p. 165).

Dr. Wagner’s research found some educational law enforcement agencies had good relationships with IHL administrators, while others had less than optimal relationships (2010). This factor had a significant impact on some department’s abilities to prepare for High Risk Low Frequency Incidents in California. The majority of the panelists in Dr. Wagner’s study reported budgetary constraints, lack of personnel and poor equipment and training had a negative impact on public safety (Wagner, 2010, pp. 162-164). Dr. Wagner’s study indicated that funding for California college public safety was a low priority within most California Community College districts (Wagner, 2010, pp. 163-164).
A quote from a panelist in Dr. Wagner’s study summed up the prevalent theme when referring to budgetary issues. (Wagner, 2010, p. 164).

"Police departments and public safety in general, are not considered essential when dividing budget monies. Instruction always takes the lion's share of the available funds."

The panelists referenced in Dr. Wagner’s dissertation agree that to properly prepare for a High Risk Low Frequency Incident on campus, there needs to be an increase in manpower, equipment and training to handle the severity of these incidents. Further, without an increase in budget, the ability to respond to High Risk Low Frequency Incidents will be compromised (Wagner, 2010, p. 167).

Local law enforcement agencies also play an important role in the effectiveness of an ASI response. Dr. Wagner’s research indicated cooperation between campus public safety and the local police agencies were inconsistent. Wagner’s study revealed most panelists reported good relations with local police agencies, while a minority expressed fair to poor relationships with community public safety partners. The primary cause of the conflict was reported as a lack of communication between the agencies (p. 167).

With larger municipal or county agencies, some agencies developed a sense of arrogance toward educational law enforcement, further the municipal or county agencies made little effort to establish professional relationships with their college law enforcement partners (Wagner, 2010, p. 165). Without professional working relationships between local police and educational law enforcement agencies, the need for a properly trained and equipped educational public safety agency is imperative.

**Institutions of Higher Leadership**

Educational law enforcement agencies have a responsibly to the university community to be a professional policing agency. They must enforce laws and reduce criminal activity in
university communities (Pope, 2011, p. 2). Unfortunately, IHL administrators sometimes interfere with educational law enforcement on campus.

In a horrific example, we can look at Penn State University’s sex abuse scandal, where the actions or inaction of the Campus Police were at the forefront of the investigation (Hopkins & Neff, 2014, p. 125). The overarching question in the scandal was why the Campus police were not notified at the time of the incident. Penn State employees from janitors to the coaching staff subverted law enforcement and reported the incident to other university officials. As a result Sandusky’s predatory actions lead to multiple sexual assaults against pre-adolescent boys; many of which occurred on campus from 1996 to 2011("Sandusky sex abuse case," 2011).

Communication

Uncoordinated leadership combined with lessons learned from uncooperative command structures, emphasize the need for effective communications between IHL administrators and educational law enforcement. Further, effective communication is vital to educational law enforcement’s successful response to High Risk Low Frequency incidents (Donahue & Tuohy, 2006).

In a shooting on December 13, 2013 at Arapahoe High School in Centennial Colorado, a school security officer claimed administrators ignored, and or punished officers who raised concerns relating to security issues (Torres & Brown, 2014). Disturbingly, another security officer reported campus administrators were previously made aware of Karl Pierson, the suspect in the Arapahoe High School shooting. Security officials told school administrators Karl used the internet to research guns and had made a death threat against his debate coach. Shockingly, the administration did not take the threat seriously before the incident ("2nd Security Officer Claims Arapahoe High Still Has Security Issues," 2014).
Threat Assessment

As we see from the Penn State and Arapahoe incidents, these administrators subverted and manipulated educational law enforcement and their efforts to effectively address security issues on their campuses. Lessons should be learned from these tragedies; security issues need to be addressed by appropriately trained personnel, who understand how to evaluate and assess threats. It could be argued, if Arapahoe High School leaders would have taken a more active approach to address the threat, this deadly situation could have been avoided.

In another incident, a campus catastrophe was averted by the decisive action of IHL leaders. In this case study, Jared Loughner, a Pima Community College student, was suspended from college due to his aggressive and odd behavior. After faculty and students expressed concerns regarding his behavior and five separate confrontations with Campus Police, Loughner was placed on suspension for violating the student code of conduct (Johnson, 2014, p. 22).

Tragically, three months after Loughner was suspended, he shot Congresswoman Gabrielle Gifford as well as killing six and wounding 16 others. In this case the violence still occurred. However, faculty, staff, and students at the college were not targeted due to the decisive action of IHL administrators and campus police (Christie & Spafat, 2012).

Decision Making for High Risk Low Frequency Incidents

Preparations for High Risk Low Frequency incidents are, by their nature, difficult for IHL administrators to comprehend. As a result, the inherent value of providing appropriate funding to training and equipment for educational law enforcement is not easily understood (Wagner, 2010).

The challenge in developing a standard operating procedure for all educational law enforcement departments is that duties, responsibilities, and training vary between IHLs. On one
hand, there are well trained and properly equipped police officers that provide public safety for their university community. While in other universities, there is sub-standard equipment and inadequate budgets, resulting in untrained security with the inability to provide adequate service to their communities (Wilson & Wilson, 2011).

Budgeting for High Risk Low Frequency incidents can be challenging when public safety is not a priority. However, when IHL administrators take a broader view of public safety, educational law enforcement departments have the budget to equip and train officers to respond to High Risk Low Frequency Incidents (Wagner, 2010, p. 163). Unfortunately in reality, all universities are one incident away from being a featured story in the media. Inasmuch, the mind set in preparing for High Risk Low Frequency incidents must change. It is not “if” an Active Shooter will happen it is “when” it happens.

**Active Shooter Trends**

A 2011 FBI study shows an increase in ASIs between 2000 and 2013; there were more than 16 incidents per year between 2007 and 2013. This trend is a significant increase from six incidents per year in the first seven years (FBI, 2013, p. 6).

Active Shooter incidents are shaping the culture in education law enforcement today. In Table 3, we see ten incidents that have shocked the IHL administrators, creating a shift in public safety expectations on college campuses around the United States (Walters, 2013, p. 13).

### Table 3 *High Profile Violent Crimes Occurring On U.S. Colleges Campuses*

<table>
<thead>
<tr>
<th>DATE</th>
<th>LOCATION</th>
<th>VICTIM(S)</th>
<th>PERPETRATOR</th>
</tr>
</thead>
<tbody>
<tr>
<td>8/1/1966</td>
<td>University of Texas</td>
<td>13 killed, 32 wounded</td>
<td>Charles Whitman, Student</td>
</tr>
<tr>
<td>5/4/1970</td>
<td>Kent State University</td>
<td>4 killed, 9 wounded</td>
<td>National Guard fired on unarmed students</td>
</tr>
<tr>
<td>7/12/1976</td>
<td>Cal State</td>
<td>7 killed</td>
<td>Edward Allaway</td>
</tr>
<tr>
<td>Date</td>
<td>Location</td>
<td>Casualties</td>
<td>Name</td>
</tr>
<tr>
<td>------------</td>
<td>-----------------------------------------</td>
<td>------------</td>
<td>-----------------------</td>
</tr>
<tr>
<td>4/5/1986</td>
<td>Lehigh University</td>
<td>1 killed</td>
<td>Joseph Henry</td>
</tr>
<tr>
<td>1/16/2002</td>
<td>Appalachian Law School</td>
<td>3 killed</td>
<td>Peter Odighizuwa</td>
</tr>
<tr>
<td>12/13/2006</td>
<td>Eastern Michigan University</td>
<td>1 killed</td>
<td>Orange Taylor, III</td>
</tr>
<tr>
<td>4/16/2007</td>
<td>Virginia Tech</td>
<td>32 killed</td>
<td>Seung Hui Cho</td>
</tr>
<tr>
<td></td>
<td></td>
<td>25 wounded</td>
<td></td>
</tr>
<tr>
<td>2/14/2008</td>
<td>Northern Illinois University</td>
<td>5 killed</td>
<td>Steven Kazmierczak</td>
</tr>
<tr>
<td></td>
<td></td>
<td>21 wounded</td>
<td></td>
</tr>
<tr>
<td>2/12/2010</td>
<td>University of Alabama-Huntsville</td>
<td>3 killed</td>
<td>Amy Bishop</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3 wounded</td>
<td></td>
</tr>
</tbody>
</table>

**Conclusions**

The data in table 3 represents just a few of the campus communities that have been irrevocably changed by the tragic loss of life as a result of an ASI. IHL administrators need to evaluate their educational law enforcement agencies to determine if best practices are being used to prepare for High Risk Low Frequency Incidents.

With the reality of limited funds, competing financial priorities and increasing budgetary constraints, public safety funding continues to be a low priority for many colleges. Unfortunately, it is not until there is a tragic event on campus that IHL administrators realize the importance of adequate funding for campus safety departments.

In the Active Shooter Incident on November 20, 2014 at Florida State University, Campus Police were on scene and neutralized the threat in less than two minutes, limiting the casualties to two students and one staff member (Cotterell, 2014).
Without the immediate response of FSUs Police, this incident could have been considerably worse given the fact there were hundreds of students in the library studying. The FSU incident is a shocking example of the unpredictable nature of an Active Shooter. The suspect in this incident, Myron May, was a FSU alumnus and a practicing attorney (Cotterell, 2014); far from the image of a mentally ill, homicidal killer.

With more than 4000 college campuses in the United States, in comparison, ASIs are low frequency incidents (Wagner, 2010, p. 18). It is somewhat understandable that many IHL administrators view ASIs as isolated incidents and have not felt the pressure to increase spending on public safety. However, when we look at the lessons learned from past ASIs, the lessons are always the same. There is not a profile for Active Shooters; Active Shooter Incidents are unpredictable and can happen anywhere in any community and the consequences will have a significant negative financial impact on the institution, through the loss of enrollment, retention and litigation.
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Comparative Analysis of Music Software Retail Stores in Japan

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Abstract

The purpose of this study is to carry out a comparative analysis of music software retail stores in Japan. As information communication technology has progressed, the preferred medium for listening to music has shifted from compact disk (CD) to downloadable media files. As a result, the business performance of music software retail stores has declined and many stores have gone out of business. The trend toward downloading music is a secular headwind for retail stores because downloading can be done anywhere and at any time. However, despite the change in how consumers purchase music, there are still retail stores that continue to thrive. Therefore this study compares retail stores dealing with music software and identifies the features of those retail stores.
1. Title of the submission:
   Highlights from a Cross-National Investigation of Content Standards for School Mathematics

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Highlights from a Cross-National Investigation of Content Standards for School Mathematics

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Abstract

National curriculum goals at the educational system level often represent the intended curriculum which contains what students are expected to learn. This study is conducted to examine how the curriculum goals described in the official documents differ from each country curriculum framework. The primary data sources for this study include the following three documents:
Taiwan: Mathematics Curriculum Guidelines for Grade 1 to Grade 9 (Published in 2003) and for Grade 10 to Grade 12 (Published in 2008).
USA: Common Core State Standards for Mathematics (Published in 2010).

Based on analyses from these curriculum documents, results of this study indicate that the mathematics content, topics covered, grade placement and cognitive level of learning expectations related to selected topic vary markedly across documents. This variability in learning expectations results in striking differences in students’ opportunity to learn mathematics.

Key words: cognitive level, learning expectation, opportunity to learn.

*This study was partly supported by the National Science Council (NSC) in Taiwan. (Grant number: NSC 102-2511-S-415-005). However, the opinions expressed here are solely those of the authors and do not necessarily reflect the policy or position of the NSC.
Title: Breaking the Code: Unlocking scholar identity in a policing state

Abstract (75-words):
The scholar identity among children in poor/minority communities is moderated by self-concepts related to power and perceptions of powerful people about the powerless. Mediated by networks, capital is built and maintained within systems and/or fields of influence. Cultural capital promised by education evolves from social capital when structural holes are filled allowing for progress toward fiscal capital. This theoretical paper proposes an empowerment pedagogy process that challenges “poverty pedagogies” in preparing inner-city youth for future success.

Introduction
Power is moderated by access. “Unqualified” or “under-prepared” people are locked out of opportunities by systems based in esoteric knowledge—those things that are typically unknowable by persons outside of these systems. One of the critical roles of education is to enable access. Defining the “policing state” in the context of urban schools is vitally important to answering questions about the function of schools. Increasingly, school policies have been put in place that espouse ideas of criminality and rehabilitation among children rather than constructivism and potential. School safety practices are becoming increasingly more punitive. Phenomena described by Irby (2013) as “net widening and net deepening” express how penalties for a wider range of behavioral infractions are leading to more severe (deeper) penalties for students including suspension and expulsion. Understanding “scholar identity formation” (Welch, 1996; Whiting, 2006) for disadvantaged populations is also vitally important for this work. Developing an identity as a scholar is different from just being smart. It means that the actor is willing to engage in complex and varied conversations with a diversity of people; the actor is willing to listen critically to opposing sides of discourse while also being patient enough to weigh arguments against sound evidence rather than emotional conjecture.

Formal schooling itself is a means to cultural capital for an educated populace — social rules and codes that are followed in school, along with the nature of classrooms allows even the most homogeneous environments to be strangely diverse. In schools, young children become friends even if their parents never come to know each other. Pedagogies and practices of teachers help to build small communities that enable complex social exchange and build networks. There are unique opportunities in classrooms to both learn codes for success as well as devolve to social isolation — teachers and school-based others within the community have a significant role to play in supporting student engagement that can lead to empowerment. To empower is to provide a means for an actor to participate and serve as a change agent in the community. It is time to support a shift from role to responsibility.

Relevant literature/Theoretical framework
There are multiple perspectives from which problems (and solutions) in a setting or field can be viewed. Just as our identities are shaped on multiple levels, so too are our ideas. Unilaterally, most of our ideas are born from “strong-tie” (Granovetter, 1983; Louch, 2001) conversations we have with self and within corporate structures like our family, immediate peer group/social circle, neighborhood or local community. We “trust the pictures in our head” (Lippmann, 1921, p. 4) previously validated by others within our strong-tie groups. These conversations impact how we feel, what we believe and how we think about regional and national issues and may also determine our global perspectives forming “spheres of influence”. Structural holes (Burt, 2009) that exist in our networks actually act as binders that could potentially help mediate weak ties and provide benefits (Burt, 2009; Gargiulo & Benassi, 2000; Seibert, Kraimer & Liden, 2001).

Building on ideas presented by Granovetter (1983), Louch (2001) and Seibert, Kraimer & Liden (2001): field specialization and work create weak social ties. “Individuals with few weak ties will be deprived of information from distant parts of the social system and will be confined to the provincial news and views of their close friends” (Granovetter, p. 202). When additional stressors are placed on social systems (language differences, racial differences, religious differences) value-differentials and even political gradients surface and may further widen gaps within systems. Bound only by weak ties, barriers are created, “new ideas spread slowly...subgroups separated by race, ethnicity, geography, or other characteristics will have difficulty reaching a modus vivendi (ibid., p. 202-203)”. Citing Burt, Feld, Fisher, Marsden and others, Louch (2000) describes the characteristics and effects of homogeneity and homophily on networks from various sources of social survey data. After analyzing information on relational triads, several hypotheses about ties and connections, cleavage points and foci were affirmed or rejected. Seibert, Kraimer & Liden (2001) issue a future research challenge to consider mentoring networks and their relationships to career satisfaction and success outcomes. We are issuing the same challenge to school settings. Empowerment is a core value of mentoring.
Mentors, caring adult others, are an important part of the student success equation. Certainly, the first level of mentoring happens close to or within a family structure—micro-level network. At the intersection of this family space and the school/community space is the neighborhood. In many minority communities, neighborhood structures are often bounded by politics and economics. Resource distribution within these larger networks is usually narrow but deeply entrenched in cultural norms and social systems. At the macro-level, earlier connections are coupled with social capital that makes room for bigger policies and enactments of favor. Kids who have mentored through this kind of pipeline for example, can generally code-switch among various groups and are better able to communicate their ideas in a range of settings.

**Positionality Statement**

**Who we are:** Having met at a casual meeting arranged by a mentor with tremendous insight, our conversation about the state of education for inner-city youth, especially Black students, has evolved to a profound level in a very short time span.

We are practitioners in our fields whose scholarship is growing with every conversation. At the core of our latest discussions (and this paper) is the essential question: what is the real function of schools? Understanding that Black and poor youth/communities generally use schools differently than higher status (socioeconomic) others, we interrogate this issue from our experiences/position as practitioners. Because we perhaps have stronger “sociological imaginations” than other practitioners — owing in large part to our experiences as first generation doctoral students — we present our thoughts as a request for expanded discourse about this very important topic.
Proposition: Examples from our work

Author 1’s work: working with teachers and students in out-of-school urban learning environments

Science teaching and learning in urban schooling contexts are replete with potential for wonder and discovery at low or no cost. Community gardens, the corner palates of highly skilled street performers and municipal waste sites are their own sustainable laboratories. Participating first as a student in similar programs thirty years ago then as a teacher and finally as a program evaluator, I am a product of STEM learning initiatives that target underrepresented populations in the sciences.

STEP to EST: school-like community-based programs

Science teaching excellence can be determined by the transformative narratives of all stakeholders within the science learning community. Asking urban teachers to teach differently—for excellence and empowerment—requires some structure but mostly social justice pedagogy. As an example, teachers were asked to use labor statistics as a viable data set for class discussion. Career projects mandated by standards were shaped using these data so that students would develop a realistic view of their aspirations. Additional strategies include:

- Assigning immediate responsibility for the improvement of their communities to the student fostering creative acknowledgement of their responsibility to their community and greater society and orient them to think like problem solvers
- Evaluating quality of proposed solutions to authentic problems by engaging community members, understanding that solutions are tied to levels of individual and collective knowledge
- Developing a daily affirmation for students and teachers through collaboration
- Celebrating cultural norms and habits without apology while upholding standards of strong communication

Author 2’s work: Grassroots initiative to address high rates of unemployment and incarceration among African American males

My daily life challenge is the work involving African American male students, educators, science education researchers, local government, and police officers. Unearthing and employing evidence-based strategies that improve quality of life trajectories among all students in underprivileged contexts (particularly those contexts that are depleted of responsible adult male role models) and infrastructures that support intra-communal social control and community organization is part of the work. While tailored to address the unique issues faced by African American male youth, my work has implications for student learners and education practitioners whose focus it is to grow in concert with diverse individuals and groups. To create environments where identity is not sacrificed but rather enhanced during exchange, collaboration, and academic engagement is an important objective of my work.
Community-based program

My background is human services. Often, the designation “human services professional” conjures images of general practitioners who work in a variety of contexts while advocating for and providing essential necessities to persons in crisis. This is certainly an important aspect of the working definition for human service professionals, but it does not fully explicate how I am positioned in the discipline. What informs my world view includes long periods of time deeply imbedded in particular personal experiences and particular disciplines within the human services genre and the interpretation of each through my academic work and research. Each provides me with a unique lens through which I observe and interpret personal struggle, human engagement, power structures, and social systems: raised in abject poverty; leaving home at seventeen without sustained financial support; adult homeless, three years; one year as a corrections officer; four years as an activities director and social worker in a geriatric care center; four years as a college instructor; 28 years as an ordained minister; seven years as a customer services representative; 22 years as a police officer (eight years as a homicide investigator, ten years as a community affairs officer); eight years working within the public school system (k-12); nine years as executive director of a nonprofit organization, and three years as a Ph.D. level social science researcher.

Conclusion

One approach to addressing large-scale needs in cities is to reimagine what appropriate teaching likes like and who is necessarily involved. We introduce a model for what we have identified as an empowerment pedagogy process as a means to helping students form scholar identities over more pathologic identities that are commonly associated with disenfranchised youth. There are clear protective factors that allow for entry into the fruitful, more productive successful side of the process. Consequently, there are risk factors that create entry points into the less fruitful side of the process of well. Rather than propose an obvious dichotomy, we posit that branching and networking make room for a continuum and/or cycling through of an actor that in spite of early challenges creates a means to the scholar identity end.
This is not a phenomenon defined by race but class, broadening its implications beyond urban demographics to include rural places as well. White children from deeply impoverished homes and communities require exposure to responsible diverse adult role models in social and recreational contexts with linkages to school systems and professional contexts as well. Being taught to be a leader versus being taught to have a job does three important things on the way to raising lower SES youth’s self-concept on par with that of youth from higher SES families:

- builds a personal empowerment structure (entrepreneur, owner, active participant in their destiny and that of their community… change agents)
- diminishes personal subjugation (employed, renter, passive observer of their own existence and that of their community)
- fosters a sense of ownership in their community and their society

As practitioners, we understand that disempowerment and marginalization are both central to social pathology and form barriers to academic self-concept: education without empowerment and access to opportunity (a context to operationalize their education and benefit from it) is useless.
Students enrolled in our programs developed their own scholar identities by making their own observations, vetting their ideas within peer and adult collaborative structures and presenting their solutions in meaningful ways. In the process, students were held accountable to the standards for strong communication but we were all transformed.

**Next steps/Closing thoughts**

Empowerment pedagogies must be developed further within the various discourses extending beyond cultural relevance and regionally centric models of teaching and learning. Globally, the challenge of education for the next 100-years’ generations must find ways to stay ahead while stepping back to some of the human principles of engagement for action. Learning to find ways that will allow overlapping generations to intersect and interact without tension will be important to the success of this movement. Among the strategies we propose for empowerment include engagement of youth in public discourse and fora about policing. We must fill structural holes created by various gaps (economic, academic, achievement, housing, health, technology) with love and intention. Challenge youth to use the conventions of public debate and standard English to build their scholarship and reveal their brilliance to those with limited understanding about them. Create opportunities for youth to serve the community as scholars rather than as manual labor for short-term projects but rather hold them accountable to long-term commitments of service learning...these require discipline and will ultimately cultivate in them habits necessary for change.

“*We want our children to learn that the greatest success lies not so much in amassing a fortune as in having a concern for others and in recovering and preserving the tradition of selfless service to family and community*”.  

We honor the work of countless others who have committed in the past and present to building Black children and Black families…

jbj/tak
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GIRL-CHILD EDUCATION IN THE PRESENT NORTHERN NIGERIA: HOW FAR SO FAR?

Education Foundation

Paper session presentation

An empirical study is being undertaken on the effect of chibok girls’ abduction on girl-child education in the present Northern Nigeria. The research hypothesized that there will be significant negative effect and a drawback on girl-child education in the Northern part of Nigeria where boko-haram has claimed to set such drawbacks. The study sought to find possible solutions to the menace.

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Abstract

It is quite disheartening that in a country where the logo claim is a giant of Africa, over two hundred plus grown up females vanished to nowhere with no ultimate source of information about their wellbeing and whereabouts. The incidence of chibok girls is really frightening and a threat to western education in Northern Nigeria. A region where this type of education is still frowned at as a doubtful one in the eyes many parents. History proved that it is with great difficulty that some parents were persuaded to send their female wards to School, their preference being marrying them off at a very tender age between 12-16 years. A look into hindrances of girl-child education into the present Northern Nigeria forms the bedrock upon which the research is based. The design is ex-post facto. Data gathering is through direct contact (interview) with parents, questionnaire is also a helpful instrument in eliciting data for the study from other categories of respondents mostly stakeholders in education. Using SPSS, findings will be depicted in form of numerical and graphical results which will utilize means, frequencies, standard deviation and regression as statistical techniques. One major expected finding is that there is significant drawback of girl-child attendance in school with the figure reaching an alarming rate in Borno, Yobe and Adamawa states of Nigeria. Based on the expected finding, it is recommended that all hands must be on deck to protect the right of girl-children to education as enshrined in the National policy on education and the world conference on Education for all “EFA”
**Introduction**

Education implies acquisition of worthwhile knowledge, skills, attitudes and understanding through morally acceptable methods in the society which a person lives.

Western education is that type of education widely known among Hausas (predominant tribe in the Northern part of Nigeria) as “Boko” and Boko’s literal meaning is a “big lie”, this indicates that western type of education in the olden times was perceived as not being true education in the region, this explain why it was most unwelcomed, viewed and received with hatred, opposition and rejection when it was first introduced in the area. It was thought to be a devious education, full of evils and the way of conversion of the people from their religion (Islam) to Christianity. This has lead to prevention of children from attending such schools in the past.

**Concept of girl-child**

Childhood in girls is undoubtedly a period of sensitivity that requires special care and attention. It is considered to be from birth to puberty or from birth to 18 years, the later is more agreeable. In Nigerian societies, the primary aim of educating Girl-child in all societies was no more than to enable her acquire appropriate attitude, orientation and commitment to ensure full realization of her potential to
the maximum. Considering the dynamism of time and culture, some changes are inevitable which gave way to some transformation and modernization on the education the girl-child is bound to receive, but whatever education that is imported is mainly agreed on serving her needs which is preparatory for the role she has to play in later life looking after home and future child bearing practice she is bound to be confronted with.

A female child in northern Nigeria is seen more or less as a delicate entity that should constantly be under the care of males in her family, she thus passes through three stages of male care and control in her life viz;

1. Her parents and older siblings

2. Her husband and or parents

3. Her children, grandchildren and or her husband

According to tradition, she is supposed to be provided for and not contribute to the family’s income, this therefore contribute greatly to the lukewarm attitude towards exposing female-children to western education in northern Nigeria. The northern society is of cause male dominated one, its concept is one such that males seen as those who will grow up to maintain the family identity and become heads are given more preferences over the females in the same family, hence the type of education and career choice among them differs. It is a normal trend in most African
countries, especially in sub-Saharan Africa for a girl to be married at an age below 18. It has been observed by many researchers that women in Africa marry at a much earlier age than their non-Africa counterparts which leads to them getting pregnant too early.

IRIN Africa (2008) reported that in Northern Nigeria an estimated more than half of the girls are married before age 15, but this report is mere old fact as the situation has truly changed. Nowadays, even rural populaces are enlightened especially with the prevalence of VVF and associated diseases, poverty and the like; a great percentage of girls are married above age 15.

In most parts of Nigeria, there is a certain level of education desired for girls to attain by their suitors and parents. High level of education is often times viewed as a leading factor which lowers a girls’ eligibility for marriage. This type of marriage deprive the girl-child an opportunity for personnel development, participation in community and national development, right to full reproductive health, right to education.

**Female education in Northern Nigeria**

Formal education of women in the Northern states notably known as the northern region of the political entity called Nigeria, could be traced as far back as the 19th century when the renowned Islamic reformer and founder of the Sokoto caliphate,
Sheikh Usman Bn Fodio invested in the education of girl-children. In his time, the Sheikh revived women education as enshrined in the Qur’an and Sunnah of the Prophet (SAW). He set example by educating women in his household to the highest level where his daughter is now a legacy in the History of Northern women elites’ Nana Asmau Bnt Fodio was a teacher, linguist, administrator, and author of 55 works and also founder of women’s education movement “Yan Taru” which still exists in today’s Sokoto state.

It is a known fact that in the past, it was with great difficulty and persuasions and through the help of the then native authority that parents were forced to send their wards to western type of schools and especially females who were conscripted to various schools outside their own localities, the pupils/students then were given monthly allowance and were well taken care of, but today, the situation has changed with the reverse being the case parents now take responsibilities of seeking admission for their female wards to various institutions, even though, story of cultural barrier as a hindrance to full attainment of educational endeavour for girl-child in the North is still very strong. This region record the highest number of out-of-school female and drop-out children.

In this poverty stricken era and prevalence of diseases, it deem pertinent to educate girl-child which is of more benefit than educating male-children. Various researchers unveiled the significant; impact of female education has on poverty
reduction, disease control and provision of sustainable development over that of male education.

Adamu in Abbagana, (2013), stated that when the female-child is educated, her knowledge base is expanded. She is able to understand and undertake socio-economic, cultural and political transformations necessary to achieve development. Education of the female child is positively related to her living standard and the only effective scheme to alleviate poverty. To achieve this, is to expand the educational opportunities available to female child.

If females are educated, there is every tendency to marry late, with each passing level of education, the result being that she gains skills and competence for gainful employment which enables her to be economically viable and a productive member of the society whose contribution to National development deem vital. She will thus marry late and has fewer children.

There is a popular notion among societies in not only the North but also in other parts of Nigerian polity, that a woman’s place is in the kitchen. She is thus brought up to accept her traditional role of bearing and rearing children and taking care of her husband and home, this notion is true in the minds of many northerners even in today’s modern north. Some years back, the researcher conducted a study on repositioning women education in Hausa land, the case of metropolitan city of
Kano, which was presented at National association of Research development, university of Port-Harcourt, Rivers state, Nigeria. It is sad to reveal the findings from the study that many of the students interviewed were into tertiary institutions mainly as a result of 4 factors,

(i) Death of husband or Divorce
(ii) To compete with an educated wife married by the same husband
(iii) An option to business where material gain is assured after completion of educational endeavour

Only a few percentage of the respondents from the above study have good intention for really being educated.

Because of the misconception people unconsciously and persistently have the fear that if a woman is educated, she loses her feminity and she is predisposed to domineering behaviour.

**Challenges of girl-child education in Northern Nigeria**

Before the menace of Boko Haram as an obstacle to Girl-child education in Northern Nigeria, several factors have combined to make for low enrolment of such children in schools. Prominent among include; early marriage. According to the UNICEF (2005), early marriage is both a formal and informal unions in which
a girl lives with a partner as if married before the age of 18. The imposition of a marriage partner upon a child means that the childhood is lost and never regained (UNICEF 2001). Such marriage hinders educating the girl-child.

Cultural practices: The female-child in Nigeria from historical, social and economic viewpoint has un-equal access to education in relation to her male counterpart. This inequality could be due to the early sex role of the girls which influence the conceptualization of their later status, and occupational inclination. In most cultures in Nigeria, the female-child only plays a subordinate role to the male child (Abbagana, 2013).

Adamu cited in (Abbagana, 2013) that the neglect of female child education is something that has to do with culture and religion but Rufai (1996) attributes the neglect to various myths including unfounded cultural belief that, educated female-children do not make submissive wives, are promiscuous and carry attitudes that are incompatible with their traditionally expected roles as future wives and mothers. Government is still battling to convince parents in some rural areas about their wards’ education when these insurgencies set to cause a draw-back in the enrolment trend.

Other factors include child labour, political constraint, poverty and misinterpretation of Religion, low self esteem.
The consequences resulting from these constraints are enormous, and do not only affect the personality in question, it goes along way to affect the family, the community and the nation at large. In fact, not educating the girl-child in reality, translates to drawing back the hands of clock of societal development. For not educating the girl-child, the community has some consequences to bear; she might become an eventual victim of human abuse and exploitation.

The Dilemma of Chibok girls

On the night of 14-15 April, 2014, two hundred and seventy six (276) female students were kidnapped from the government secondary school in the town of Chibok in Borno State. Nigeria; where Boko Haram insurgents claimed responsibility for the kidnap.

Boko Haram’s ideology is opposed to western type of education which they believe is the root cause of criminal behaviour in the country, but in so believing several thousands of innocent people were killed and displaced which was as a result of various attacks perpetrated by the group.
Since 2010, the group has targeted schools; killing hundreds of students, since then more than 10,000 children have been unable to attend school as a result of their activities.

Education in Borno State and neighbouring North eastern states of Adamawa, Yobe, Gombe, Bauchi and also in Kano has been fractured merely as a result of the insecurity in such areas.

On the 17th of September, 2014, the researcher’s own institution (FCE Kano) was attacked leaving several staff and students dead and injured. In the same year, several institutions in the same city were attacked with the victims majorly women.

Until today, nobody has any concrete information about the chibok girls’ whereabouts or what is done to rescue them. This in fact makes several eyes blink as to the genuinety of the abduction.

Commenting on governments’ attitude, one of the participants at the daily sit-out protest and one of its leaders Dr. Oby Ezekwesili who was an ex-minister of education said that people are now fully aware that Nigerians’ government has no plan to bring back the girls after several months of their abduction.

“The ministry of youths development whose mandate include inculcating in the youths human rights values, social justice, equity, fairness and gender equality, has shown no disceable concern about the fate of the abducted 276 chibok girls, even
as the universally recognized season of good will approaches” All Africa.com. Okupe (2014) on the side of Nigerian government stated that the issue of the Chibok girls is a national tragedy that must be borne with fortitude. Government has not given up on finding and rescuing the girls. He further stated that the chibok girls case remains a thorn in the flesh of this administration and assured that the government would have done anything possible to have them released if that were possible earlier but that the issue demands extreme caution to avoid losing the girls while describing the girls abduction as not the regular incident involving the seizure of one or two persons, hence their rescue must be handled with utmost care. Now the questions in minds of many northerners and needed answers include;

1. Why is Northern Nigeria the only victim in the country when it is the region lagging behind as far educational development?

2. What is the fate of western education in Northern Nigeria when it has been declared as forbidden type of education by the insurgents?

3. What will be the status of one young ones especially girls education when it was already faced with challenges?

There are so many questions worth asking and needed answers.

Research Methodology
The study is an empirical one using survey design. The instrument for data collection was the questionnaire and interview which were designed, validated and pilot tested to investigate the effect of Chibok girl’s abduction and related activities on girl-child education in Northern Nigeria particularly in Kano State.

The population comprised all students of tertiary institutions in the metropolitan Kano, parents and pupils/students in primary and secondary Schools. All female lecturers and teachers in the schools listed. A sample of 287 students, 50 female lecturers and teachers in primary and secondary schools, and 50 parents was drawn via simple random sampling technique where proportionate procedure was used for sample selection. Altogether, a sample of 387 subjects was used.

The data collected for this study were assembled, using SPSS, data was processed and presented as cross tabulations and bar graphs.

Table 1. Summary of respondents by institution

<table>
<thead>
<tr>
<th>S/No.</th>
<th>Name of Institution</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Bayero University, Kano</td>
<td>40</td>
<td>16.9</td>
</tr>
<tr>
<td>2.</td>
<td>Northwest University</td>
<td>10</td>
<td>4.2</td>
</tr>
<tr>
<td>4.</td>
<td>School of Management Studies</td>
<td>20</td>
<td>8.4</td>
</tr>
<tr>
<td>5.</td>
<td>School of Technology</td>
<td>12</td>
<td>5.1</td>
</tr>
<tr>
<td>6.</td>
<td>School of Health Technology</td>
<td>20</td>
<td>8.4</td>
</tr>
<tr>
<td>7.</td>
<td>School of Hygiene</td>
<td>25</td>
<td>10.5</td>
</tr>
<tr>
<td>8.</td>
<td>School of Nursing</td>
<td>15</td>
<td>6.3</td>
</tr>
<tr>
<td>9.</td>
<td>Aminu Sch. of Islamic &amp; Legal</td>
<td>35</td>
<td>14.8</td>
</tr>
<tr>
<td>Studies</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>---------</td>
<td>---</td>
<td>---</td>
<td></td>
</tr>
<tr>
<td>10. Sa’adatu Rimi College of Education, Kumbotso, Kano</td>
<td>30</td>
<td>12.7</td>
<td></td>
</tr>
</tbody>
</table>

| 11 | Total | 237 | 100 |

<table>
<thead>
<tr>
<th>Interview</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Primary Schools Pupils</td>
<td>25</td>
<td>50</td>
</tr>
<tr>
<td>2. Secondary Schools Students</td>
<td>25</td>
<td>50</td>
</tr>
<tr>
<td>Total</td>
<td>50</td>
<td>100</td>
</tr>
</tbody>
</table>

Source: Field survey, 2014

Sample was drawn according to the population of the schools especially regarding questionnaire distribution among students of tertiary institutions; Bayero University has the highest number of participants about 16%, with school of technology and that of nursing recording the lowest number of respondents.

Table 2 Respondents’ view on whether to continue western education in northern Nigeria as a result insecurity

| Respondent's view on whether to continue western education in northern Nigeria as a result of insecurity |
|---|---|---|---|
| | Frequency | Percent | Valid Percent | Cumulative Percent |
| Valid No | 61 | 15.8 | 15.8 | 15.8 |
| Yes | 295 | 76.2 | 76.2 | 92.0 |
| Undecided | 31 | 8.0 | 8.0 | 100.0 |
| Total | 387 | 100.0 | 100.0 | 100.0 |
The table shows that after the abduction of Chibok girls and attacks on western type of schools, majority of the respondents still held firmly the belief that western education should not be scrapped with 76.2%, about 15.8% opined it should be stopped while 8%, are undecided.
Table 3. Respondents’ view (students whose schools were attacked only) on whether to go back to their schools after the attack.

Institution * Respondent's view (students whose schools were attacked only) on whether to go back to their schools after the attack Crosstabulation

<table>
<thead>
<tr>
<th>Institution</th>
<th>Respondent's view (students whose schools were attacked only) on whether to go back to their schools after the attack</th>
<th>No</th>
<th>Yes</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>School A</td>
<td>Count</td>
<td>7</td>
<td>18</td>
<td>25</td>
</tr>
<tr>
<td></td>
<td>Expected Count</td>
<td>10.6</td>
<td>14.4</td>
<td>25.0</td>
</tr>
<tr>
<td></td>
<td>% of Total</td>
<td>8.8%</td>
<td>22.5%</td>
<td>31.2%</td>
</tr>
<tr>
<td>School B</td>
<td>Count</td>
<td>9</td>
<td>16</td>
<td>25</td>
</tr>
<tr>
<td></td>
<td>Expected Count</td>
<td>10.6</td>
<td>14.4</td>
<td>25.0</td>
</tr>
<tr>
<td></td>
<td>% of Total</td>
<td>11.2%</td>
<td>20.0%</td>
<td>31.2%</td>
</tr>
<tr>
<td>School C</td>
<td>Count</td>
<td>18</td>
<td>12</td>
<td>30</td>
</tr>
<tr>
<td></td>
<td>Expected Count</td>
<td>12.8</td>
<td>17.2</td>
<td>30.0</td>
</tr>
<tr>
<td></td>
<td>% of Total</td>
<td>22.5%</td>
<td>15.0%</td>
<td>37.5%</td>
</tr>
<tr>
<td>Total</td>
<td>Count</td>
<td>34</td>
<td>46</td>
<td>80</td>
</tr>
<tr>
<td></td>
<td>Expected Count</td>
<td>34.0</td>
<td>46.0</td>
<td>80.0</td>
</tr>
<tr>
<td></td>
<td>% of Total</td>
<td>42.5%</td>
<td>57.5%</td>
<td>100.0%</td>
</tr>
</tbody>
</table>
From the table above, data revealed female students of Federal College of Education Kano, were more scared perhaps because of all the attacks, FCE Kano was more deadly, many female students were killed, a female lecturer shot and many others injured, FCE has 22.5% of the female students not wishing to return back to school, but the situation in school of hygiene is favourable to some extent as only 8.8% of the sample have no wish to continue their education, the percentage is slightly high in school of management studies 11.2% of the students.

Source: Field survey, 2014
were afraid to continue schooling. Altogether, a total of about 42.5% have no wish to return back to school for now.

Table 4 Parent’s view on whether to withdraw their female wards from schools

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Valid</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>14</td>
<td>28.0</td>
<td>28.0</td>
<td>28.0</td>
</tr>
<tr>
<td>Yes</td>
<td>28</td>
<td>56.0</td>
<td>56.0</td>
<td>84.0</td>
</tr>
<tr>
<td>Undecided</td>
<td>8</td>
<td>16.0</td>
<td>16.0</td>
<td>100.0</td>
</tr>
<tr>
<td>Total</td>
<td>50</td>
<td>100.0</td>
<td>100.0</td>
<td></td>
</tr>
</tbody>
</table>
It is evident from the data gathered that more parents have been scared, hence opined that they are not in support of their children going back to schools 56%, about 28% agreed with continuation of their daughters’ schooling, 16% are yet to decide.

**Table 5:** Parents’ view on alternatives for schooling if they have or about to withdrawn their female wards from schools.
Parent's view on alternatives for schooling if they have or about to withdraw their female wards from schools

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Valid</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Marriage</td>
<td>37</td>
<td>74.0</td>
<td>74.0</td>
<td>74.0</td>
</tr>
<tr>
<td>Street Hawking</td>
<td>1</td>
<td>2.0</td>
<td>2.0</td>
<td>76.0</td>
</tr>
<tr>
<td>Child Labor</td>
<td>5</td>
<td>10.0</td>
<td>10.0</td>
<td>86.0</td>
</tr>
<tr>
<td>Send them abroad for schooling</td>
<td>2</td>
<td>4.0</td>
<td>4.0</td>
<td>90.0</td>
</tr>
<tr>
<td>Undecided</td>
<td>5</td>
<td>10.0</td>
<td>10.0</td>
<td>100.0</td>
</tr>
<tr>
<td>Total</td>
<td>50</td>
<td>100.0</td>
<td>100.0</td>
<td></td>
</tr>
</tbody>
</table>

Source: Field survey, 2014
The table revealed that majority of the parents about 74% are in favor of marrying their daughters when only few about 4% could afford to send them abroad or elsewhere in the country for schooling. Street Hawking and business are least favored only 2% because parents are now enlightened about the dangers of such acts. 10% of the subjects here prefer sending the girls to work as house helps for self-support and income to the family.

**Discussion of Research Findings**

Findings of this piece of work indicated a drawback to girl-child education as a result of the insurgencies which cause insecurity in most northern states, hence, for several months children could be seen wandering around every nook and cranny of the region because of either fear or closure of their schools, it happened that some female lectures and teachers are planning to resign from their jobs. Parents have no strong faith in the security of their children, though they are in favor of not scrapping western education but are unwilling to send their children to school. Of the students in tertiary institutions; many have already withdrawn themselves or forced to withdraw by family members.

One of the group of students studying philosophy of education the researchers has taught recently were the direct bomb-blast victims in a lecture theatre at FCE Kano majority of whom were never seen back especially the female students.
Pupils in primary schools and students of secondary schools all over Kano opined that they need to be educated but are now afraid of schools. The scenario in schools is one such that it is laced with lack of composure/concentration, fear, absenteeism, abscondment from the students and teachers alike. Encouraging female education was realized to be inevitable given the level of ignorance pervading the women in this part of Nigeria especially the rural dwellers.

Several approaches were adopted for the prospects of girl-child education by the federal and state governments including awarding scholarships to pupils and children from poor homes, reducing school fees, providing free learning materials and school uniforms to female students, free-feeding for all pupils at lower and upper basics all with the intent of motivating the children and discouraging the parents from withdrawing them from school.

UNICEF, UNESCO, USAID and other agencies have designed programs variously to ensure the girl-child in developing parts of the world is opportuned to acquire functional education.

**Summary and Conclusion**

The effect of Chibok girls’ abduction in Borno state, the mass killings of staff and students and bombings of schools in Yobe, Adamawa, Gombe, Kano and other parts of Northern Nigeria, spell doom for the girl-child education.

The following formed summary of the work;
• Government has essentially not been seen to be proactive in the situation of Chibok girls’ abduction and girl-child education in Nigeria.

• Nigerian government is doing nothing firmly to ensure that schools are adequately secured.

• Government has not offered any worthwhile support for the growing number of displaced youths grappling for survival in displaced persons’ camps, hence no provision for schooling.

When the dust of the whirlwind of misconception incidence of western education nearly settled, a more bewildering maze of occurrences happening one after another causes threat and confusion among the Northern Nigerian students sand their parents on the future status of western education in the North. There is growing fear that the situation may revert back to old times when girl-child was denied her birth right of being educated.

Conclusively, a survey into current happenings especially concerning education in the Northern part of Nigeria deem vital in this world of educational boom. Education is seen as a necessary instrument for the upliftment of the standard of any society. In this past few years in the Northern Nigerian societies, education is suffering a threat of serious decay and collapse. With the insecurity in the region, many schools were forced to close down, pupils and students were withdrawn by
their parents, students in tertiary institutions either have withdrawn themselves voluntarily or are forced by relatives and spouses.

**Suggestions for Remediation**

- Girls-child education in Nigeria has been one of the most neglected areas, thanks to the awareness campaign by various agencies; it has now been identified as needing a very urgent attention. These campaigns should be mounted in rural and semi-rural areas as it was done in the old times using projectors.

- Gender inequity should be discouraged.

- There is need for security, peace and harmony as these are necessary elements before any educational program could take-off.

- The abducted girls should be returned safely back to their families.

- The government should put a stop to these violent activities.

- Girl-child education should be re-strengthened.

- More research should be conducted on girl-child education in Northern Nigeria
Reference


TITLE OF THE SUBMISSION:

Alomai aloatu (meeting of faces)

The paper will highlight some of our work with the students as we explore the concept of alomai aloatu (meeting of faces) from a Samoan perspective in connection with the notion of courageous conversation in the context of early childhood. One must know of oneself in connection with another, nevertheless, knowing oneself has no meaning unless interaction occurs between the individual and others. The concept of alomai aloatu (meetings of face) (TuiAtua, 2009) will be unpack to emphasise the importance of making connection and forming relationships for courageous conversation to occur when working with students as well as early childhood services.

Samoa is an oral culture where face to face relationship is deemed crucial when passing knowledges from one generation to another. Alomai aloatu (meeting of faces) therefore is very much part of the Samoan culture when building relationships and where values such as alofa (love) and faaloalo (respect) are practice daily for the sake of va fealoai and va fealofani (relational space). (Iuogafa,2008). Various voices of talanoaga (conversation) from our work will be explored to understand the role of courageous conversation and empowering learning for Pasifika students.

TOPIC AREA
Early Childhood Education / Indigenous Education

PRESENTATION FORMAT
Work in progress

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LECTURERS’ PERCEPTION ON LEADERSHIP OF THEIR SUPERVISORS IN PRIVATE UNIVERSITIES IN MALAYSIA

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ABSTRACT

Most of the studies carried out on Universities have focused on Leadership of Vice Chancellor, Deputy Vice Chancellor and Presidents. There has been limited research on leadership of the positions like Deans, Deputy Deans and Head of Departments who are directly involved with lecturers The purpose of this quantitative study is to present some of the findings derived from the study of lecturers’ perception on transformational leadership, lecturers’ empowerment and outcome as perceived by the lecturers. This study utilized a self-developed questionnaire. The questionnaire is administered on 200 lecturers from five Private Universities in Malaysia. The data obtained is analyzed using SPSS to address the answers to the research questions.

Key Words: Private Universities, Transformational Leadership, Empowerment.

The Author Acknowledges University of Malaya for funding this Project titled ‘Leadership for Learning in Private & Public Universities in Malaysia through University of Malaya Research Grant – RP 014D-13 HNE
Introduction

Over recent years an extensive amount has been written on the subject of leadership within the compulsory education sector and, within higher education (HE), much has been focused on the challenges of managing and leading universities and colleges senior level (Blackmore and Blackwell, 2006; Bolton, 2000; Deem, 2004; Knight and Trowler, 2001; Smith, 2002, 2005, 2007). Also much has been written about the challenges of managing universities and colleges. However, relatively little has been written on leadership and management at the faculty or departmental level. ‘The environment is often analyzed from a central institutional perspective, their decision-making structures and leading officers’ (Bolton, 2000: 1). In Malaysian context too most of the studies focus on leadership of Vice Chancellors in Public Universities and Presidents in Private Universities. This study however reflects the leadership at faculty and departmental level.

In Malaysian Universities leaders at faculty and departmental levels are responsible for students learning outcome and capacity building of their teaching staff, hence the authors believe to study the leadership at these levels. Since most of the studies have focused on transformational leadership and its relations to outcome in school education, we here in this paper put emphasis on transformational leadership and its association with the outcome in relation to the lecturers.

Studies about the effects of transformational leadership (Leithwood, 1994; Silins, 1994) suggest it contributes to restructuring initiatives and ‘teacher perceived" student outcomes. However, this contribution is mediated by other people, events and organizational factors, such as teacher commitment, teacher job satisfaction, instructional practices or school culture (Hallinger and Heck, 1998). At the same time, other researchers (Maehr and Midgeley, 1991; 1996; Maehr and Anderman, 1993; Maehr and Fyans, 1989) have developed impressive
empirical evidence to suggest that the mediating variable school culture can make a school a place in which teachers feel positive about their work and students are motivated to learn. A positive school culture is associated with higher student motivation and achievement, improved teacher collaboration and improved attitudes among teachers toward their jobs (Stolp and Smith, 1995). Research (Sashkin and Sashkin, 1990; Sashkin and Walberg, 1993; Ogawa and Bossert, 1995; Leithwood, 1994) suggests that school culture does not operate in a vacuum and crucial to its creation and maintenance are the leadership practices of the school principal. Further, evidence from several studies (Leithwood and Jantzi, 1990; Sashkin and Sashkin, 1990) provides strong support for the claim that transformational leadership contributes to more desirable school cultures. In summary, it seems that there are compelling theoretical and other reasons for advocating transformational leadership in schools at the current time, but there is still considerable work to be done in clarifying empirically the effects of this form of leadership on students (Leithwood et al., 1999). One area needing further investigation is the nature of the relationship between transformational leadership through the mediating variables of teacher’s involvement and development with teachers’ higher need satisfaction as outcome. Since all these studies are carried out on school principals, we here intend to pursue it on deans.

**Objectives of the Study**

The objective of the study is to explore the mediation of lecturers’ involvement and development between transformational leadership of their supervisors and lecturers satisfaction of higher needs. This study therefore answers the following questions

1. Is there any correlation between transformational leadership of deans, deputy deans or head of the departments, lecturers’ satisfaction of higher needs and lecturers’ involvement and development in private Universities in Malaysia
2. Does the factor lecturer’s involvement and development mediate the relationship between transformational leadership and satisfaction of higher needs?

Methodology

This quantitative study utilized survey method by administration of questionnaire on the sample drawn from population of lecturers from private universities in Malaysia.

Sample

Two hundred lecturers were randomly selected from eight different private universities in Malaysia. Each university contributed 25 lecturers from five different departments from two different streams—science - engineering and humanities and social sciences.

Research Instrument

This study utilized self-developed questionnaire as research tool. This questionnaire is developed from different theoretical framework like transformational leadership theories, human resources management theories and Maslow’s hierarchy of needs. From transformational leadership theories four factors were taken which are Idealized influence, inspirational motivation, Intellectual stimulation and individual consideration. From human resources management theories two factors were taken which are lecturers’ involvement and professional development. From Maslow’s hierarchy of needs four factors were taken which are sense of belongingness to organization, sense of ownership, self-esteem and self-actualization. For each factors eight items were framed and total item being eighty. The response pattern was organized by using 5 point Likert scale of 1 to 5, where 1 is never, 2 is rarely, 3 is sometimes, 4 is usually and 5 is always. The newly designed questionnaire was sent to four experts and contents were modified as per their suggestions. Later the questionnaire was subjected to pilot testing by administrating it on fifty different lecturers from three different universities. The data obtained
was subjected to testing reliability analysis and the items with low and non-significant correlation were removed. During the process three items from idealized influence and inspirational motivation, two items from intellectual stimulation and individual consideration were eliminated. The Cronbach’s alpha obtained for idealized influence, inspirational motivation, intellectual stimulation and individual consideration was 0.834, 0.816, 0.822 and 0.801 respectively. The data was subject to factor analysis. Two items with correlation less than 0.3 were eliminated. The KMO value after eliminating two items was 0.818, which is at acceptance level and the p value for Bartlett’s Test of Sphericity was less than .05, hence all twenty items were found interrelated. By Principal Axis Factoring four factors were extracted which explained 74 % of variance. The pattern matrix obtained as a result of Prom ax rotation showed that item 1 to 5 clearly load on factor 1, item 6 to 10 on factor 2, item 11-15 on factor 3 and 16 to 20 on factor 4. Canonical correlation between the four items was between 0.58- 0.78, hence the four factors obtained are not totally independent to each other. Similar statistics was applied for the other constructs like lecturer’s involvement and development and satisfaction of higher needs. The final questionnaire as developed by above stated process has 43 items classified as Transformational leadership 20 items with Cronbach’s alpha 0.83 ; Lecturers’ involvement and development 8 items with Cronbach’s alpha 0.78 and Satisfaction of higher needs Satisfaction of higher needs 15 items with Cronbach’s alpha 0.81.
The correlation relationships between transformational leadership, lecturer’s empowerment and lecturers’ satisfaction of higher needs are presented in Table 1. From table 1 it is evident that all of the three variables have significant correlation with each other hence can be subjected to multiple regression analysis to find association between three.

Table 1: Correlation between transformational leadership, empowerment and satisfaction

<table>
<thead>
<tr>
<th></th>
<th>Transformational leadership</th>
<th>Empowerment</th>
<th>Satisfaction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transformational leadership</td>
<td>.775**</td>
<td>.664**</td>
<td></td>
</tr>
<tr>
<td>Empowerment</td>
<td>.637**</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The regression analysis test was conducted to find out mediation of empowerment between association of transformational leadership and satisfaction of higher needs. Three regressions were conducted. Satisfaction of higher needs was first regressed upon transformational leadership and then upon transformational leadership and empowerment. Empowerment was regressed upon transformational leadership. Table 2 illustrates the unstandardized beta and standard errors, t value and p value for the regressions. It is evident that all the t values are significant.

Table 2: Results of Regression Analysis

<table>
<thead>
<tr>
<th>Dependent variable</th>
<th>Independent variable</th>
<th>Unstandardized B</th>
<th>Std Error</th>
<th>t</th>
<th>sig</th>
</tr>
</thead>
<tbody>
<tr>
<td>Satisfaction</td>
<td>Transformational leadership</td>
<td>.502</td>
<td>.054</td>
<td>9.353</td>
<td>.000</td>
</tr>
<tr>
<td>Satisfaction</td>
<td>Empowerment</td>
<td>.520(B)</td>
<td>(SEB) .086</td>
<td>6.022</td>
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<tr>
<td>Empowerment</td>
<td>Transformational leadership</td>
<td>.702(A)</td>
<td>(SEA) .041</td>
<td>17.257</td>
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The mediation of empowerment was computed using Sobel’s test. The Sobel’s test statistic value as shown in Table 3 is 5.7014 and p<.001 shows that empowerment mediates the relationship between independent and dependent variable.

Table 3: Sobels’ Statistics

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Discussion & Conclusion

The results of this study significantly add to the literature in terms of association of transformational leadership with outcomes in terms of high need satisfaction of the followers. This is in agreement with the earlier studies by scholars like (Stolp and Smith, 1995; Sashkin and Sashkin, 1990; Sashkin and Walberg, 1993; Ogawa and Bossert, 1995; Leithwood, 1994). Empowerment in terms of lecturers’ involvement and development is found to be significant mediating variable that confirms, though transformational leadership is determinant of satisfaction of higher needs, but with mediation of the empowerment it brings more significant outcomes. Along with it this study put forwards a foundation stone for new instrument that is used to collect data. Further with the techniques of Confirmatory Factor Analysis, this instrument will be further validated for future use.

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LEADERSHIP FOR LEARNING OF DEANS IN PRIVATE UNIVERSITIES IN MALAYSIA-WHAT DO LECTURERS SAY

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ABSTRACT

A great deal of the literature concerning Higher Education leadership focuses, somewhat predictably, on the perceptions and perspectives of leadership of Vice Chancellors as understood and explained by the deans. There is relatively limited exploration of leadership from the lecturers’ point of view and less empirical data on how lecturers view the leadership of deans of their departments. This article outlines findings from a study that explored how lecturers viewed the leadership of the deans in private universities in Malaysia. It focuses particularly on how lecturers view the leadership of their deans in terms of leadership style which is responsible for lecturers’ growth and development and student’s outcome. This study has utilized qualitative approach by interviewing lecturers from three different private universities in Malaysia.

The Authors Acknowledge University of Malaya for funding this Project titled ‘Leadership for Learning in Private & Public Universities in Malaysia through University of Malaya Research Grant – RP 014D-13 HNE
Introduction

In the last two decades the area of leadership has been studied more extensively than any other aspect of human behavior (Kets de Vries, 1993; Goffee and Jones, 2000; Higgs and Rowland, 2000). While much research on leadership (broadly) has been reported in the business literature and school leadership, the body of work on academic leadership, specifically, is much smaller (Ramsden, 1998; Ramsden et al., 2007). Some of the more recent work on leadership within the university context that has been reported has focused on levels of Vice Chancellors and Presidents who have authority and power as a result of their formalized role(s) (Askling and Stensaker, 2002; Bryman, 2007; Harris, 2006; Knight and Trowler, 2000; Ramsden et al., 2007; Scott et al., 2008; Yielder and Codling, 2004). Very little research focuses on the Dean’s position, even though it has a significant role to play in learning and teaching outcomes for students, program quality and the reputation of the institution within which they work. The country like Malaysia which is becoming Higher Education hub in Asia, too has very little or no research on Dean’s level. This paper therefore intends to the explore the findings from qualitative study involving interviews of lecturers from three different private universities in Malaysia on three themes, Student’s outcome, Leadership and Community involvement.

Due to limitations of time and space, this paper directly reflects the findings.

Students’ Outcome

Malaysian Higher Education Qualification framework put emphasis on outcome based education and that needs to be reflected through evidences. Hence in all of the three private universities under study have common focus on student’s outcome. These are academic excellence, absorption of their graduates in work market, leadership and innovation. All these private Universities students need to score good grades a, attend training programs and internships and
in result have good job offers from private sector. Besides most of the students also secure scholarships in foreign universities for further education.

**Community**

In all these private university, university–community partnership plays an important role. The private sector business community, Non-Governmental Organizations and local community have strong links with the faculties and departments. For example private business community sponsors various leadership programs and internship programs for students, have research collaboration and funding sources for faculty; NGO’s involve students and lecturers in their community service research activities and local community too help and sponsor funds for various activities.

**Leadership**

Leadership of Deans has been a crucial factor towards students’ outcome and community involvement. Most of the deans as described by the lecturers are transformational and distributed leaders, are team players, have faith in lecturers and are open to change. They more focus on leadership development in lecturers and staff and keep high expectations from all (students, lecturers and including themselves)

**Conclusion**

This is an initial investigation and exploration of Dean’s leadership in Malaysian Private Universities. The authors are involved in analyzing data from the interviews of lecturers from both private and public universities in Malaysia, and once completed would furnish more details.
References


Case Study on Regional Economic Vitalization Achieved by the Effective Use of Music

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Abstract

The purpose of this case study is to examine regional economic vitalization achieved by the effective use of music. There are several methods for achieving regional economic vitalization through music: first, include the name of the region in the song title or lyrics. Second, include the name of a special product reminiscent of the region in the song title or lyrics. The third method is to hold musical events in a specific region irrespective of any relationship between the music itself and the region. These methods can characterize the respective efforts from the following perspectives: whether their influence on regional economic vitalization is short term or long term, and whether they are dependent on the region’s resources. From these perspectives, we will analyze regional economic vitalization achieved by the effective use of music.
Using Emerging Instructional Technologies and Active Learning Strategies to Support Students’ Development of Higher Order Thinking Skills

Abstract

There is an increased awareness of the need for 21st century students to develop higher-order thinking skills in order to succeed in college and on the workplace. Much is being learned from research that explores the significance of engaging students in activities designed to increase their higher order thinking skills. This paper will discuss the importance of higher order thinking skills such as (a) critical thinking and problem solving, (b) collaboration across networks, (c) accessing and analyzing primary information and (d), curiosity and imagination. A secondary purpose of this paper is to examine how the emergence of instructional technologies can be used to develop students’ Higher-Order Thinking Skills (HOTS) as they participate in active learning environments. Finally, the presentation will discuss examples of the latest technologies, strategies and models that practitioners can use enhance students’ development of higher order thinking skills in a technology supported active learning instructional environment.

INTRODUCTION

There is a growing trend of emerging instructional technologies in today’s classrooms. According to the National Center for Education Statistics (2010), in 2009, approximately 97 percent of teachers had one or more computers in their classroom. Internet access was available for over 90 percent of the classroom computers and the ratio of students to computers was 5.3 to 1. Students are not given enough instruction on
developing critical thinking skills. Given the plethora of technology tools, it is now easier than ever for teachers to design critical thinking instructional activities. This paper will highlight needs of the 21st century workforce, second, discuss how technology has experienced exponential growth in our schools, third, discuss how HOTS should be integrated in classroom discussion, present a pedagogical approach that nurtures HOTS development in students, and finally, discuss several emerging instructional technologies that teachers can use to help students develop critical thinking skills. In our increasingly digital world, educators must prepare 21st century students to participate in an increasingly competitive digital world. Students’ must develop 21 century skills in order to be successful in today’s workplace. These skills include: (a) creativity and innovation, (b) communication and collaboration, (c) critical thinking and problem solving, (d) digital citizenship, and (e) technology operations and concepts (http://www.learning.com/21cs/).

A recent ISTE assessment from over 500,000 elementary and middle school students showed that students displayed many positive technology based strengths including 73% exhibited a positive attitude toward using technology that supported learning, 72% practiced safe, legal and responsible use of information and technology. However, there were several less positive findings as listed below:

- 33% can collect and analyze data to identify solutions and make informed decisions;
- 34% can process and report data results;
- 38% are able to plan strategies to guide inquiries; and
- 46% are able to process data and report results.

Thus, three years of data from Learning.com 21st Century Skills Assessment showed that although students are using technology at a rather comfortable pace, many skills including higher order skills are lacking.

There are several Higher Order Thinking Skills (HOTS) that students should have in order to be successful in today’s society. Paul and Elder (2014) describe a critical thinker as a person who:

- Raises vital questions and problems, formulating them clearly and precisely;
- Gathers and assesses relevant information, using abstract ideas to interpret it effectively;
- Thinks open-mindedly within alternative systems of thought, recognizing and assessing their assumptions, implications and practical consequences as needed; and
- Communicates effectively with others in figuring out solutions to authentic complex problems.

Implicit in this description is the simple truth that in order to nurture and develop critical thinking skills in students, educators themselves must be able to think critically. Since many schools now have mobile technologies, there are many apps that are available to help teachers develop instructional activities that promote HOTS.

As outlined in Bloom’s Taxonomy, higher order thinking skills (HOTS) nurture synthesis and evaluation of learned instructional content. HOTS involves thinking that is utilizing thinking skills at the higher level of the cognitive hierarchy (Anderson &
Krathwohl, 2001). It involves discerning rationale and analysis of material for breadth of knowledge (Bloom, 1956). Knowledge has become more about speed of acquisition than higher-order thinking. In fact, some studies report that young brains seem to wired less for storage and more for finding information. Synthesizing content includes breaking information into its separate parts to explore understandings and relationships. Evaluating content involves having students making decisions based on criteria to determine the content reliability and accuracy, quality and effectiveness. In traditional classrooms, designing instructional activities to facilitate HOTS has been difficult for several reasons, including the lack of resources available. Not with the development and availability of emerging instructional technologies it is now easier than ever to develop critical thinking skills in today’s students. It is important to note that as in all good teaching, pedagogy comes first, then the tools to support come second.

To address this growing concern, instruction should be carefully designed to give students the opportunity to reflect, revise and produce logical solutions. They need to utilize thinking skills that will help them recall and verify information. HOTS indicates that the student can understand, apply and analyze critical knowledge. Providing such instruction will allow students to gain a more complex understanding of information they encounter and it promotes good decision-making and problem solving in real world applications. This method of learning will help students gain greater confidence in themselves and this confidence will prompt them to want to explore further the subject matter at hand.

**Active Learning Supports Effective Learning**

Positive interactions can occur in the classroom when students are fully engaged and focused on instruction. Learning requires the attention and concentrated effort of the student. Unfortunately, a large number of students are just going through the motion and not really fully engaging in the activities and instruction delivered by classroom faculty. One way to overcome this lackadaisical attitude displayed by an increasingly larger number of students is to get the students engaged in active learning practices. Active learning helps students to overcome their lack of interest by engaging the student in more interactive participatory activities. Students can design their course of studies with the faculty member’s assistance. They can build their new knowledge base on prior learning experiences and personal research interest.

Creating an active learning environment also relaxes students who are worried about their grade. Many faculty members can recollect stories about student coming to class on the first day and causally telling the professor that they have never made a grade below an A. Certainly, grades have a positive or negative effect on students learning and their engagement. Studies reveal the relationship of grade perception of students and faculty.

According to Carifio, J. & Carey, T. (2010), it is important for teachers to maintain an environment where schooling remains optimally challenging. Some researchers maintain that minimum grading keeps students engaged and contributes positively to student motivation. In some classroom environments, the instructor informs the students that grades are not the focus of the course, however, the focus is to acquire new knowledge and to be proficient with applying the newly learned knowledge. This
reassurance helps to motivate students to become more involved in the subject matter instead of spending time thinking about what grade they want to earn. Students show motivation in class when they have participated in skill training and when they feel they have ownership of the content they are learning. This external influence tends to indicate more involved engagement and deeper learning than students without prior skills training (Tippin & Lafreniere, 2012).

An active learning approach can facilitate students’ higher-order thinking skills through the use of simulations, modeling, explaining, collaboration, giving feedback, and allowing for self-reflection. The main objective of active learning is to assist students’ development of higher order thinking skills through the use of inquiry-based problems and emerging technologies. Additionally, by building on student interests and background knowledge, students are more engaged in the learning process. Active learning benefits students in many ways. For instance, students gain confidence in solving problems, grow accustomed to using their own background and prior knowledge to understand concepts, and acquire strategies for learning how to learn and reflect on their learning (Powell, Cleveland, Thompson, & Forde, 2012).

It is important to note that educators need to promote higher-order thinking in a way in which students can relate the new content to their prior knowledge and understandings. Additionally, students’ cultural and linguistic background should be considered when planning curricular higher-order thinking instructional activities (Richards, Brown, & Forde, 2007). Incorporating cultural and linguistic factors in the learning process matters. In fact, as suggested by UNESCO (2003) learning should be related to an individual’s view of him or herself as well as their group’s relation to the technological participation. Additionally, it is important to build on students’ prior knowledge and map it onto skills and competencies that will help them become successful adults (Richards et al. 2007). The simple fact is that student learn more and retain more when they can make the association of what they already know to what they are expected to know. In other words, students learning increases when they already familiar with the content.

Studies of learning report that students are able to develop higher order thinking when they are able to think “metacognitively,” that is, to reflect on their own thinking and performance so as to monitor and revise, if necessary. (Vygotsky, 1978) argued that talking things through, internally or aloud, actually assists in the learning process by helping one organize and manage his/her thought processes. Given the plethora of emerging technologies now available, it is incumbent that educators design instruction to facilitate the development of students’ higher order thinking skills. Technology plays a major role in getting students to graduate up to the level where active learning incorporates higher order thinking.

**Technology Support**

The next section of this paper will briefly discuss some of the latest websites and applications that can be used to support students’ higher order thinking development using an active learning approach.
Simulations have been used for decades to train, explain and entertain. It is now possible to easily incorporate simulations in classroom instruction. There are two types of simulations, procedural and situational. Procedural simulations teach about something; situational simulations teach how to do something. There are four qualities that make simulations great tools for developing critical thinking skills in students. These qualities include:

- Compresses time or slows down processes;
- Repetition with variations of similar processes;
- Observation of complex processes; and
- Safe experimentation and cost effective.

There are several other examples of simulations that are available for use by students. A few of the more popular simulations are briefly described below:

PHet interactive simulations (phet.colorado.edu). This popular web site provides free online physics, chemistry, biology, earth science and mathematics simulations. As of January 2015, it has delivered over 200 million simulations.

Froguts Frog Dissection HD (http://www.froguts.com/). This realistic 3D simulation of a bullfrog is designed to better facilitate knowledge and comprehension of frog anatomy and physiology. An advantage of simulations is that more students can now participate in the learning experience without the costly expense of a real laboratory.

Darfur is Dying (http://www.darfurisdying.com/). This simulation depicts the horrors of genocide. This narrative based simulation offers an animated glimpse of what life is like for the millions of displaced Darfurians residing in refugee camps. Although very sensitive in nature, this simulation highlights the fact global issue of genocide is not only as a past occurrence, but also it continues to be a political strategy used in many parts of the world. Through technology this game can be shared with one in the world with a computer and internet access.

LiveBinders (http://www.livebinders.com/welcome/home). This ePorfolio product allows one to create a virtual 3-ring binder to organize your resources and share your work with others. It also allows for collaboration, communication, feedback, and revision in an online environment. It helps students to become more organized and parents can engage and be informed about the work of their children. rThe emergence of new technologies now make it possible to create digital arenas where students can create, display, reflect and share their work.

VoiceThread is an app where teachers and students can add work samples. Additionally, students can:
- Add content from multiple sources (also scan documents);
- Allow other students, teachers and parents can leave feedback using multiple types of input (text, audio, video);
- Reflect and annotate their work; and
- Share work easily with others.

Google sites. This site allows students to create portfolios that showcase their work and also collaborate with others. An important feature of Google sites is the ability to work collaboratively on projects and receive real-time feedback.

Weebly. This website builder allows students to create web sites from a variety of site templates and themes. The Weebly app allows users to use their iPad to edit and add content on the go. Additionally, Weebly has features built specifically for education.

Conclusion

Given the technological advances now available, educators are now able to better support students higher order skill development. However research suggests that critical thinking is not often presented in a systematic way in colleges of education. Institutions should place greater emphasis on ensuring that their teachers are effectively able to use critical thinking competencies and develop a long-term professional learning communities or other faculty development programs for their faculty. Once faculty are trained in critical thinking competencies they can teach these principles to the pre-service teachers.
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2015 Conference Proceedings

We would like to thank all those who attended the 2015 Hawaii International Conference on Education. We look forward to seeing you at the 14th Annual Conference to be held in January 2016. Please check the website this February for dates and further details.

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ISSN #: 1541-5880