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Molloy College

The Division of Nursing

PhD in Nursing Program

THE IMPACT OF TECHNOLOGY-ENHANCED LEARNING ACTIVITIES ON
NURSING STUDENT ENGAGEMENT IN THE CLASSROOM

a dissertation

by

ALICIA A. STONE

Submitted in partial fulfillment of the requirements

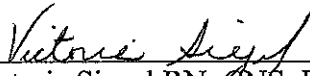
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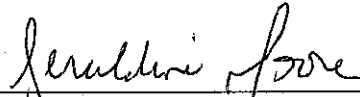
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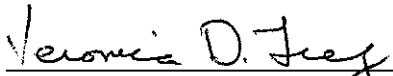
MOLLOY COLLEGE
DIVISION OF NURSING

The dissertation of Alicia A. Stone entitled The Impact of Technology Enhanced Learning Activities on Nursing Student Engagement in the Classroom in partial fulfillment of the requirements for the degree of Doctor of Philosophy in the Division of Nursing has been read and approved by the committee:


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ABSTRACT

THE IMPACT OF TECHNOLOGY-ENHANCED LEARNING ACTIVITIES ON NURSING STUDENT ENGAGEMENT IN THE CLASSROOM

Educating student nurses in the present environment requires professors to stay current with new methodologies as well as innovations in technology. The question is how to address both the impact of technology and the skills of clinical reasoning, and keep the students involved in the material. If there can be integration of each aspect through the use of technology-enhanced learning activities on the internet and preparation to approach the issue, then perhaps this can increase success. This is a quasi-experimental intervention study that explored the impact of a case study blogging assignment on the engagement of students enrolled in a fundamental nursing course. A pre-test/post-test design, using the Adapted Engaged Learning Index as the instrument, was conducted over an eight week period. A total of 153 students received a pre-test to measure engagement. The students were then divided into control and intervention classes. A post-test was administered after 5 pre-class blogging assignments had been completed.

The results indicated there was no significant differences between the pre and post-tests for either the intervention group ($p = .118$) or the control group ($p = .110$), although the faculty identified an increased ability to participate in class and clinically reason. The study introduced the use of technology to encourage student preparation prior to class which may lead to increased participation and knowledge integration. The findings led to the recommendation that further studies should be conducted to identify technology-enhanced educational interventions that increase student engagement. These would include using the full semester in a course that only

has one component, increasing orientation of the students to blogging in the learning management system, and expanding to multiple collegiate sites to increase generalizability.

It is imperative that educators engage nursing students in learning and facilitate their mastering of clinical reasoning skills. Nurses need to be proficient in clinical reasoning as their professions calls for the ability to make timely and effective decisions. Through creative and innovative educational strategies, students will start to make the connections necessary to develop this mindset. This research explored the importance using technology enhanced educational adjuncts to assist in the transformation of nursing education and hence, to prepare future professionals.

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brought together by a common goal. Gloria, Marcia, Mercy and Jeanine are inspirational and will always hold a place in my heart.

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My friends stayed true to our relationships despite my limited time and excuses to get out of dates and parties. They keep telling me that I am their inspiration. Their friendship has been mine.

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My mother always wanted me to become a doctor. Although it took longer than she wished for me to begin, in the end I was able to realize the dream. She provided unconditional support and love throughout this journey. I will forever be thankful for her motivation and devotion. I am now thrilled to be her Dr. Dearie.

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DEDICATION

This dissertation is dedicated in memory of my father, Marvin Rosten.

He has been the wind beneath my wings.

CHAPTER 1

STATEMENT OF THE PROBLEM

INTRODUCTION

Nursing classrooms of the late 20th century were filled with professors who assigned readings and lectured to their students, hoping they had read in advance so they could understand the concepts being relayed. For the most part, students passively listened to lectures and were not active learners. If students did not spend any time in preparation, they were at a disadvantage during the lesson. The students received the information and studied for exams, using their notes and the book for reference only. There was no internet, no social media and certainly no World Wide Web.

Today's learner has changed, requiring a change in nursing education. Students are given readings that are often available on electronic devices. Most students are accustomed to looking up definitions and problem-solving on the internet. Web 2.0 or the interactive and user-controlled capabilities of the World Wide Web (Grassley & Bartoletti, 2009) became part of their daily lives. The challenge for today's professor is to find a way to engage students in learning nursing principles while keeping them actively involved in the process. Research on the practice of active learning strategies suggests that when students are actively involved in thinking during the learning process, improved student outcomes result (Braxton, Milem & Sullivan, 2000). In addition to technological advances, there has been a great deal of research on how the brain learns. Metacognition is awareness of one's own thinking processes that is used

for clinical reasoning and reflection (Banning, 2008). In order to enhance the ability to think about how one thinks and develop the ability to apply the concepts, exposing the students before, during, and after classes increases their absorption of the topics and application to clinical situations. Professors of today often incorporate metacognition and active learning strategies when helping students develop the ability to go beyond a simple awareness of one's own thinking and advance to higher levels of cognition (Kuiper & Pesut, 2004).

Educating nursing students in today's environment requires professors to stay current with new methodologies as well as innovations in technology. The collegiate population is comprised of "digitally native" students who are well aware of the instant availability of media as well as "digitally immigrant" students, returning to school, who may be struggling with the equipment (Lindquist & Long, 2011). As Benner and colleagues state in their book, *Educating Nurses: A Call for Radical Transformation*, there needs to be a shift in presentation from didactic and rote memorization to clinical reasoning skills that will give graduates the ability to function in a rapidly changing health care system (Benner, Sutphen, Leonard & Day, 2010). The question is how to address both the impact of technology and the skills of clinical reasoning, and keep the students engaged in the material. If there can be integration of each aspect through the use of a technology-enhanced activity on the internet such as blogging, then perhaps success can be achieved. Technology has an unfulfilled potential to become a cognitive tool that advances students' clinical reasoning skills, rather than solely making traditional learning tasks easier (Lindquist & Long, 2011). Other disciplines, such as business and education, have studied the impact of technologically enhanced learning activities on their students. It is important to explore the effect it will have on nursing students.

Through the use of technology-enhanced learning activities on the internet, nursing students can become more involved in the educational experience so that meaning can be created through self-driven analysis and the dynamic partnership between the professor and the students can be strengthened (Magolda & Platt, 2009). The professor can use assignments on the World Wide Web to encourage topic discussion, incentivize pre-class readings, and create a forum for out-of-class discussion about future class topics. This allows for a shift of focus from teacher-centered to learner-centered activities and invites the student to assume more control over their own studies. As Magolda and Platt (2009) indicated, “the goal is to redefine learning so that it never starts or ends; instead it becomes integrated into the process of living” (p. 15). It is imperative that nursing students become lifelong learners. Synthesizing and evaluating the information prior to arrival in class helps to reinforce the material and enhances the learning experience.

While learning produces cognition, defined as what someone knows, metacognition describes what students know about their knowledge (Vos & De Graaff, 2004). Active learning strategies seek to develop metacognition over the acquisition of knowledge. The active participation of the student in analyzing the problem that is presented and applying the information to a case study involves metacognition.

Nursing education goes beyond the classroom and into the clinical area, in which students practice under the guidance of their professor. Clinical experiences are designed to reflect the classroom lectures. In the clinical arena, a professor chooses assignments that enhance the material presented. Benner, Sutphen, Leonard, and Day, (2010) have suggested that there be a “shift from a sharp separation of clinical and classroom teaching to integration of classroom and clinical teaching.” (p. 83). This is indicative of a need for student engagement that is seamlessly

transferred from theory to the bedside. The use of technology-enhanced learning activities that use clinical reasoning questions with scenarios and simulation laboratories could help students to assimilate the information when in the clinical setting. In addition, these techniques could be used to develop a dialogue on caring that Benner et al. (2010) identify as essential to nursing care.

Simulation scenarios presented in a laboratory evolves from fundamental cases that require responses to basic patient needs to complex decision-making requiring application of clinical reasoning (Burke & Mancuso, 2012). Nursing faculty develop an environment beneficial for learning “structure presimulation and post simulation activities that foster symbolic coding operations, provide the structure for skill rehearsal supporting motor retention processes, and promote self-regulation of behavior and self-efficacy during the simulation and debriefing process” (Burke & Mancuso, 2012, p. 543). This form of learning is aimed at promoting anticipation of clinical problems and supporting the development of metacognition.

Educating nursing students to “think like a nurse” is a challenge for every nursing professor. This is the concept that defines clinical reasoning.

Educational practices must help students engage with patients with a deep concern for their well-being. Clinical reasoning must arise from this engaged, concerned stance, always in relation to a particular patient and situation and informed by generalized knowledge and rational processes, but never as an objective, detached exercise (Tanner, 2006, p. 209).

Using technology-enhanced learning activities with case studies on the fundamental level will introduce the sophomore nursing student to the concept of clinical reasoning and lead to engagement in class discussions.

Using Web 2.0 technology activities, students can answer questions and dialogue with one another about classroom content. Web 2.0 is also known as the “read/write” web which uses websites that are interactive and allows users to read information and create, interact and evaluate it (Berg, 2010). This encourages engagement on the part of the student which is defined as a “persistent and pervasive affective-cognitive state or work-related state of mind that is characterized by vigor, dedication and absorption” (Schaufeli, Martinez, Pinto, Salanova & Bakker, 2002, p. 74). It has been found that those who are engaged performed better, felt less exhausted and cynical, experienced more efficacy and vigor and reported being more dedicated and absorbed.

Improving student engagement with active, learner-centered undertakings and interactive groups is currently a trend in all levels of education (Cakir, 2013). Introducing the use of Web 2.0 technology activities such as blogging in the beginning of their nursing education has the potential to engage future nurses in the incorporation of nursing principles in the early years of development. Web 2.0 denotes what has been called the ‘read/write web’ which is an interactive site that allows users to read information and create, interact, and evaluate content (Berg, 2010). “In addition to individual learning activities that encourage students to seek, examine, analyze and share their knowledge, students need interaction and collaboration with their peers to engage in their learning process. Interaction and collaboration with peers take on an important place in student learning” (Cakir, 2013, p. 245). One example of Web 2.0 technology is the blog. A blog

is an online journal that encourages interaction and collaboration within a classroom community. The entries can evoke responses by other students that can be linked to the original text which encourages online conversations. Debates about clinical issues and case study presentations are possible with blogs (Grassley & Bartoletti, 2009).

In order to conduct this study, the orientation of faculty at the participating institution to the use of blogging's role in their students' preparation for the classroom experience is imperative. To incorporate this technique, a comprehensive plan must be initiated so that faculty can provide a seamless experience that embraces the value and involvement of the student population. Emphasis should be on the conceptualization of the time and effort that is invested in activities that are empirically connected to desired classroom objectives (Kuh, 2009). Two major facets that were stressed during the faculty orientation process were in-class encouragement and out-of-class involvement with educationally relevant activities on the internet.

To address both the challenge of technology and to incorporate clinical reasoning, the concept of engagement must be analyzed. Popkess and McDaniel (2011) state that "evidence in higher education supports the practice of active learning as a method of promoting student engagement among college students that has positive effects on problem solving, critical thinking, and persistence" (2011, p. 89). Their study showed that nursing majors perceived themselves to be less engaged in active and collaborative learning as compared to other college majors. Student engagement activities that have been cited as increasing students' learning and personal development include absorption in academic work, participation in extracurricular activities, interaction with faculty members and peers, involvement in student government, and

place of residence (Melius, 2011). Therefore, this study will provide support for professors of nursing to incorporate newer educational practices.

There is a dearth of literature or research that examines the impact of social software such as blogging on engagement in the nursing classroom. Social software enables new forms of community-based collaborative learning (McLoughlin & Lee, 2007) by providing a place for interactions and reflections. Many different disciplines have benefitted from the use of social software and show the value of contributing to cognitive stimulation, relational exchanges, and facilitation of the learning process (Schroeder, Minocha & Schneidert, 2010). Investigating the engagement of students to promote clinical reasoning via social media is important and timely. There are numerous computerized networks, learning management systems, and resources available on college campuses, for example, chat rooms and blogging. These communication forums allow for further learning through reflection and analysis.

Chat rooms are a branch of a computer network in which participants can engage in real-time discussions with one another. These are available on college campuses and are one way to allow for reflection and analysis. Another avenue is blogging on a forum. A blog is an online diary that can be part of an open forum for responses to questions and comments.

Striving to improve nursing education by incorporating available computerized resources throughout the curriculum has the potential to improve the learning process through the use of active learning strategies and to increase engagement of the students. This study will demonstrate if preparation using blogging is effective on the involvement of nursing students in the classroom. It was hoped that this intervention would stimulate a commitment to learning and a state of inquiry through the use of technology.

Purpose of the Study

The purpose of this study was to compare sophomore year nursing students' level of engagement with the course and class instruction with their professor. A pre and post instructional intervention process was used to evaluate the effectiveness of the use of technology-enhanced learning activity known as blogging to engage nursing students in the classroom. Students were divided into control groups and intervention groups.

Statement of the Problem

The study's purpose was to evaluate the effectiveness of the use of social media to engage nursing students in the classroom. Does the use of a technology-enhanced learning activity such as blogging answers to proposed questions prior to class attendance increase students' engagement in classroom activities? The null hypothesis is: The use of technology-enhanced learning activities such as blogging has no impact on self-reported student engagement in classroom activities. The alternative hypothesis is: The use of technology-enhanced learning activities such as blogging has a positive impact on self-reported engagement in classroom activities.

Research Questions

Increasing awareness of a variety of educational interventions that will enhance engagement and the learning process are the objectives of many nursing faculty. If the use of Web 2.0 technology will help to transform nursing curricula and move the focus from teacher-centeredness to student

centered methodologies, the result may be an increase in clinical reasoning skills. Engaged learning incorporates psychological and behavioral aspects of student engagement. There is a motivational element that leads to the student's decision to take part in the learning process and may result in measurable psychological indicators of engagement (Schreiner and Louis, 2006).

It is also important to note outcomes in relationship to the comfort level of participants. Does the impact of technology-enhanced learning activities indicate a higher engagement outcome when the participant is a digital native or a digital immigrant? Demographic data and self-reported comfort level were analyzed against survey outcomes.

The study was guided by the following research questions:

Research Question One

What knowledge of technology-enhanced learning activities do sophomore level nursing students report?

Research Question Two

Do nursing students in the control groups and intervention groups differ in their level of engagement as measured by the pre-test and post-test?

Research Question Three

How do nursing students compare on pre-tests and post-tests within each group, control and intervention, with respect to level of engagement?

Research Question Four

What is the relationship of nursing students in a control group and intervention groups on level of engagement and demographics of gender and age based on post-test results?

Definition of Terms

The following conceptual and operational definitions of student engagement will be used for this study.

Student Engagement

Kuh (2007) defined student engagement as participation in educationally effective practices, both inside and outside the classroom, which leads to a range of measurable outcomes. He also states that it is “the time and effort students devote to activities that are empirically linked to desired outcomes of college and what institutions do to induce students to participate in these activities” (Kuh, 2009, p. 683).

For the purpose of this study, the following definition of engagement provided by Coates (2007) is used: “students’ involvement with activities and conditions likely to generate high-quality learning measured along six engagement scales: (1) Academic challenge (extent to which expectations and assessments challenge students to learn); (2) Active learning (students’ efforts to actively construct their knowledge); (3) Student and staff interactions (level and nature of students’ contact with teaching staff); (4) Enriching educational experiences (participation in broadening educational activities); (5) Supportive learning environment (feelings of legitimation within the university community); and (6) Work-integrated learning (integration of employment-focused work experience into study).

It is also important to define how engagement improves learning. Coates (2005) states the following: The concept of student engagement is based on the constructivist assumption that learning is influenced by how an individual participates in educationally purposeful activities... In essence, therefore, student engagement is concerned with the extent to which students are

participating in a range of educational activities that research has shown are likely to lead to high quality learning. The definition of “engagement” on which further theoretical work is based states that engagement is “a persistent and pervasive affective-cognitive state or work-related state of mind that is characterized by vigor, dedication and absorption” (Schaufeli, Martinez, Pinto, Salanova & Bakker, 2002, p. 74).

Social Media

Social Media are forms of electronic communication (as internet sites for social networking and blogging) through which users create online communities to share information, ideas, personal messages, and other content. Social software enables new forms of community-based collaborative learning (McLoughlin & Lee, 2007) by providing a place for interaction and reflection.

Web 2.0

Web 2.0 are defined as websites that have the ability to allow users to interact with each other (Thiele & May, 2014). This has been generally viewed as a second generation communicative form of the internet that stresses active participation, connectivity, collaboration and sharing of knowledge and ideas among users (McLoughlin & Lee, 2007). Several writers have referred to it as the “Read-Write Web” (Price, 2006; Richardson, 2006) because of its ability to enable members of the community to contribute and form new content.

Technology-enhanced learning activities

Technology-enhanced learning activities are defined as student assignments that utilize the available technology on the college platform. This has evolved from a domain that uses a personal learning environment that applies Web 2.0 tools and social software to education (Rahimi, Van Den Berg, & Veen, 2015).

Blogging

Blogging is defined as writing in the first person by individuals which is published online for others to read and react to that includes opinion, descriptions of experiences, answers to posed questions and reporting of events (Heilferty, 2009). A blog is an online journal or diary. Entries are published to a Web site in chronological order, the most recent entry being first. As with many things on the Web, blogs come in varying shapes and sizes. They encourage interaction and collaboration within an online community. They can be public or private. Writers typically make rich use of Web-linking features to connect to resources on the Web. Blog entries are normally followed by a comment button, allowing readers to write a reaction, which is then linked along with all other comments, into the original text. This can be useful for peer to peer interactions. Students can read what their peers have to say and respond with their own ideas. Blogs can be used to organize asynchronous discussion forums and address recurring questions or issues in the classroom. Blogs can organize class discussions or seminars, be a place to summarize readings, enhance student dialogue when used in conjunction with an assignment such as an article review, or for encouraging students to share course-related resources such as current events or helpful websites (Grassley & Bartoletti, 2009).

Learning Management System

The *learning management system* is defined as an educational platform that consists of several asynchronous and synchronous communication functions, such as the storage of documents and content, discussion boards and chats and video meetings (Hustad & Arntzen, 2013). In the college, each class is assigned a site within the system to obtain handouts, post assignments, and contribute to the forum in the form of a blog response. Access is only available to members of the class and the professor.

Collegiate Population

The definition of collegiate population is comprised of “digitally native” students who were born after 1982 well aware of the instant availability of media (Fox & Varadarajan, 2011). “Digitally immigrant” students who were born prior to 1982 may be struggling with the equipment (Lindquist & Long, 2011).

Undergraduate Nursing Student

An undergraduate nursing student is defined as a person between the ages of 18 and 40 who is enrolled in a baccalaureate nursing program at an accredited college/university. This study focused on sophomore students who are enrolled in the fundamentals of nursing course at a private university setting.

Metacognition

Metacognition is defined as the executive control system of the person’s mind and as higher order thinking that supervises a person’s thoughts, knowledge and actions (Hsu & Hsieh,

2014). Essentially, it is awareness of one's own thinking process that is used for clinical reasoning and reflection (Banning, 2008).

Active Learning

Active learning is defined as any instructional method that engages students in the learning process (Prince, 2004). It involves students in meaningful learning activities and encourages them to think about what they are doing (Bonwell & Eison, 1991). The principal elements are student activity and engagement in the learning process.

Clinical Reasoning

Clinical reasoning is defined as determining what information is necessary, interpreting the data, developing a plan of care, assessing the positive and negative aspects of actions, and achieving sound clinical outcomes (Johnson & Flagler, 2013). Its development is promoted through self-reflection and critical thinking. Critical thinking has been defined as a cognitive process used to analyze problems (Victor-Chmil, 2013). It has been seen as a general term that applies to many disciplines. Clinical reasoning refers to the cognitive process that is used to determine the significance of the information and scientific knowledge as it applies to a particular situation (Simmons, 2009).

Theoretical Framework

The work of Alexander Astin (1999) on student involvement, which eventually became engagement, is the basis of the conceptual framework. He stated that "It is not so much what the

individual thinks or feels, but what the individual does, how he or she behaves that defines and identifies involvement” (p. 519). There are five basic postulates that are identified:

1. Investment of physical and psychological energy in various objects.
2. Regardless of its object, involvement occurs along a continuum.
3. Involvement has both quantitative and qualitative features. Quantitative: how many hours the students spends studying. Qualitative: whether the student reviews and comprehends reading assignments or simply stares at the textbook.
4. Amount of student learning and personal development associated with any education program is directly proportional to the quality and quantity of student involvement in that program.
5. The effectiveness of any educational policy or practice is directly related to the capacity of that policy or practice to increase student involvement.

Astin demanded that a curriculum provoke enough student effort and investment of energy to bring about an outcome of learning and change. There must be active participation of the student in the process of learning. There are three elements to the development of students in the college atmosphere: “*input* (characteristics of the student at the time of college entry), *environment* (programs, policy, faculty, peers and educational experiences the student is exposed to during college), and *outcomes* (the student’s characteristics after exposure to the environment)” (Popkess & McDaniel, 2011, p. 89).

This theory is important to the process of incorporating blogging into nursing classes since blogging alters the environment of the student whose input already incorporates internet usage prior to admission and looks at the outcome of engagement as a result of exposure.

Another theorist who addresses the learning process is Dr. Lev Vygotsky who published Social Development Theory in 1962. Vygotsky argues that social interaction precedes development; consciousness and cognition are the end products of socialization and social behavior. According to Ferdig and Trammell (2004), the pedagogical paradigm that supports the use of blogs in educational settings is Vygotsky's writings. The person's social environment or culture plays an important role in determining which stimuli are choreographed and paid attention to by the individual (Maag, 2005). The construction of knowledge is the outcome of the social process of language development that occurs over time. Learners need real opportunities for writing and publishing the knowledge they have acquired over time. With the opportunity to publish their knowledge online, students can create their answers, which in turn provide an expanded learning environment. Students who may be too shy to share their thoughts in class may be more comfortable with blogging for expressing their responses and receiving feedback (Stiler & Philleo, 2003).

Three major themes arise from Vygotsky's work (1978):

1. Social interaction plays a fundamental role in the process of cognitive development.
2. The "More Knowledgeable Other" is anyone who has a better understanding or a higher ability level than the learner with respect to a particular task, process or concept. Usually this is the teacher, coach or older adult but could also be peers, a younger person, or even computers.
3. The "Zone of Proximal Development" is the distance between a student's ability to perform a task under adult guidance and/or peer collaboration and the student's ability to solve the problem independently. Learning occurs in this zone.

This theory promotes learning contexts in which students play an active role in learning. Roles of the teacher and student are therefore shifted, as the teacher collaborates with his or her students in order to facilitate meaningful construction. Learning therefore becomes a reciprocal experience for student and teacher.

Significance of the Study

The swift expansion of the availability of social media has created a debate among college professors, and nursing professors in particular, as to its place in pedagogy. Nurses play an important role in the health of the community. According to Virginia Henderson (1960):

“Nursing is primarily assisting the individual (sick or well) in the performance of those activities contributing to health, or its recovery (or to a peaceful death) that he would perform unaided if he had the necessary strength, will or knowledge. It is likewise the unique contribution of nursing to help the individual to be independent of such assistance as soon as possible” (p. 3).

It is imperative for professors of nursing to educate nursing students in the most effective way so that, in turn, they can excel in caring for the community in this ever-changing and complex healthcare system.

Mallow and Gilje (1999) questioned the impact of technology within nursing curricula on the students’ ability to attain and develop critical thinking, caring, communication and socialization skills into the nursing role. There is growing discussion in the nursing literature about this topic. The relationship between blogging pre-class and engaging students in the classroom, however, has not been explored in baccalaureate nursing education.

Summary

It is important to examine the impact of social media on student engagement. With increased exposure and usage by faculty and students, measuring the influence of social media may help to

direct the future of nursing education. Few studies have looked at how blogging impacts collegiate education. Benner and colleagues challenged nursing faculty to seek a more effective approach to nursing education (2010). With the emphasis shifting from critical thinking to clinical reasoning, using case studies to encourage students to prepare prior to class enables the professor to use class time for expansion and development of this important skill in theory as well as clinical performance. This research looked to demonstrate the engagement of the student increases from using social media this way, so that the delivery of nursing education can begin to embrace a new direction. Much of the research to date has indicated the importance of engagement leading to a positive impact on learning and clinical reasoning. This can lead to the lifelong implementation of inquiry and learning.

CHAPTER II

REVIEW OF RELATED RESEARCH

Chapter two presents a review of the related literature for the study of technology-enhanced learning activities and student engagement. The literature is divided into several areas: technology-enhanced learning activities; blogging; student engagement; educational principles; active learning; learning styles; net generation; and clinical reasoning.

Technology-enhanced learning activities

Using technology-enhanced learning activities such as blogging requires three features that enable students to take full advantage of the technique. These features are: capability which refers to the cognitive abilities and competencies required to anticipate outcomes; support which are the resources such as learning materials and course structure; and autonomy which denotes the student's freedom to choose what, how, when and where to learn (Rahimi, van den Berg & Veen, 2015). The introduction of Web 2.0 technology shifted control of learning to the user. Dumitrescu (2015) noted that these technologies “stimulate users’ intelligence and enrich their online experience through participation in a wide variety of activities” (p. 2).

The literature related to technology learning activities speaks to the concept of connectivism. This concept encourages growth and learning through networking. This sharing of ideas between students and faculty assists in enriching the educational experience. McLoughlin and Lee (2007) reported “witnessing the rapid expansion and proliferation of technologies that are focused on creating communities in which people come together to collaborate, learn and

build knowledge” (p. 664). By using technology-enhanced educational tools through a Web 2.0 platform, the community of learners share their understanding and perspectives of a subject. Through this online discourse, the participants are able to communicate their insights to each other and expand their ability to critically think. Blog projects, guided by the educator, can be used to help develop their reasoning skills. Dumitrescu (2015) states: “They can comment on each other’s blog posts, exchange ideas with each other, correct each other’s writing or even contribute to it. The learning community that enables both formal and informal writing that blogs may create is a plus that differentiates them from the traditional classroom environment” (p. 5).

Not all of the essayists agreed with the use of technology-enhanced learning. Bayne (2015) spoke to the overemphasis on technology and isolation of the individual from its material context. She cautioned that “we need to move away from our over-emphasis on how technology acts on education or how education can best act on technology” (p. 18). She challenged the educators to adopt a more critical approach with broader debates on new forms of technology and its impact on education, society and culture.

An example of this type of activity is evidenced in a study by Davies (2014). The undergraduate nursing students were given an assignment using the Apple iPad to facilitate increased levels of interaction during class sessions. The researcher found that using mobile computing platforms increased engagement and student confidence in presentations. This study only used 24 students and needs to be replicated to confirm the results.

Social networking sites such as Facebook have been used in technology-enhanced learning activities. Estus (2010) described a geriatric pharmacotherapy course in which 30 students joined a closed Facebook page that created a discussion board. Each week, three

students posted a healthy aging topic. Other students wrote their comments and reactions to it. The topics were also discussed in the classroom. The educator noted that the students felt they could discuss the topics more openly and it increased their engagement in classroom conversations.

Technology-based learning has been employed in a blended classroom approach. Blended classes consist of a combination of traditional face-to-face teaching with the use of technology to support and enhance the presentation of curricula. Currently, there is an increased reliance on the internet for dissemination of course material (Milanese, Grimmer-Somers, Souvlis, Innes-Walker, and Chipchase, 2014). Many educators use the web as their sole source of resources. While some question the suitability of this approach for all students (Ally & Fahy, 2002), it has become increasingly popular over the past decade. Milanese et al., (2014) conducted a review of blended learning studies and reported weak evidence showing improved learning outcomes compared with traditional classroom models. The elements that were critical to success included “engagement and communication with peers, flexibility of how learning occurs (to suit the learning styles and environment of the student), the provision of adequate support from tutors, mechanisms by which to validate knowledge, repetition and practice exercises, and design and presentation of courses” (Milanese et al., 2014, p. 88-89).

The use of blended learning has grown in recent years due to the belief that diverse delivery methods may have the ability to enhance learning outcomes as well as increase the students' satisfaction with the learning experience (Lim & Morris, 2009). Effective learning strategies are beneficial to the development of metacognitive ability. Hsu and Hsieh (2014) point out that psychologists and educators recognize the need to use complex problems in order to enhance the active process of knowing and the ability to complete a given task. Research

which studied the subject of metacognition showed that using scenarios that required problem-solving increased learning and performance (Schleifer & Dull, 2009; Hsu & Hsieh, 2014).

A report by Johnson, Adams-Becker, Estrada, and Freeman (2015) for the New Media Consortium and the Educause Learning Initiative has projected technology trends, challenges and emerging technologies. These researchers identified six key trends that are anticipated to hasten the adoption of technology. These trends are: increased use of blended learning; redesign of learning spaces; growing focus on measurement of learning; proliferation of open educational resources; advancing cultures of change; and greater cross-institutional collaboration (Skiba, 2015).

In order to address these trends, increasing digital literacy through using technology-enhanced learning activities such as blogging and blended classes becomes imperative. Digital literacy has been defined as the ability to understand information and to evaluate and integrate information in multiple formats that the computer can deliver (Glister, 1997). This is an attribute that is essential in the nursing profession and the future health care arena. Introducing blogging as a way to engage students in technology-enhanced activities starts to bridge the way to digital literacy.

Blogging

The use of blogging in curricula has been explored in many different venues in the past few years. Interest in its use and application because of the orientation of the digitally native student population has increased. Using social media inspires students to cooperate with one another and may increase engagement and attentiveness to course content (Abe & Jordan, 2013). An

exploration of the literature related to blogging, student engagement and its potential impact on nursing education principles is the focus of this chapter.

Skiba and Barton (2006) addressed the use of new technologies in the learning arena as preferable to the generation of students known as the “millennials.” They appreciate their use because they prefer digital literacy, experiential learning, interactivity, and immediacy. Blogging is a social networking technology that works well with education because it has interactive, reflective and collective attributes (Baird & Fisher, 2005). Berg (2010) points out, “instead of the professor being the only one to view and give feedback on their work, student work now can be viewed and commented upon by classmates and members of the larger community” (p. 21).

There is much discussion in the literature on the use of weblogs. “Weblogs linking, replying, sorting and tracking features enable users to better exchange knowledge and information and collectively construct meaning” (Du & Wagner, 2007, p. 2). Blogs have been noted to develop a sense of community within the class. The use of blogging encourages students to interact with one another and has the potential to increase engagement and interest in course content (Abe & Jordan, 2013). Students can learn as much from each other as they do from an instructor or a textbook which makes blogging a potential transformational technology for teaching and learning (Williams & Jacobs, 2004).

Epstein and Ray (2014) point out that if both teachers and students understand the use of technology, it can serve to increase their technological and thinking skills. Blogging encourages self-directed versus teacher-directed learning, provokes self-reflection as a model of social experience and self-identity, and develops the process of learning (Maag, 2005). It is important to create an atmosphere of discovery and encourage engagement. Chen, Lambert, and Guidry

(2010) indicate that social-emotional caring and a positive climate where students feel free to express ideas and even falter are essential to learning. Blogging has been seen as a dimension suited to the individual voices of students that can empower them and encourage them to become more critically analytical in their thinking (Oravec, 2002). Blogging gives students time to think, prepare and reflect (Yang & Chang, 2012).

Abe and Jordan (2013) indicate, “in order to effectively integrate social media (i.e., blogging) into the course curriculum, it is necessary to instruct students in using social media critically and intentionally to optimize learning outcomes” (p. 18). Baird and Fisher (2005) point out that the current generation of learners is technologically savvy and are constantly connected to their peers and professors through a host of social networks via Smart phones, iPods, and computers. They have been referred to as digital natives who have unique learning styles that are nonlinear and modified to individual needs (Karaksha, Grant, Anoopkumar-Dukie, Nithanan & Davey, 2013).

Assigning blogging as part of coursework has the potential to increase engagement while challenging educators and undergraduates to embrace the possibilities of content presented in this format (Garrity, Jones, VanderZwan, de la Rocha & Epstein, 2014). Blogging encourages a connection with course content outside of the classroom that then comes into the discussion during class time. Williams and Chin (2009) found that to increase student engagement, it is imperative to create class dialogue following students’ experience with blogging. Blogging can promote participation of students who may not otherwise have contributed to traditional classroom discussion (Garrity et al., 2014). Much of the literature has pointed out that the shift of the focus of the teaching-learning process is from teacher-driven to student-driven (Garrity et al.,

2014; Maag, 2005; Magolda & Platt, 2009). The constraints of time, place, and authority disintegrate as a partnership develops between student and teacher (Magolda & Platt, 2009). Mazer, Murphy and Simonds (2007) conclude that student learning and engagement may be heightened when educators meet students in their own territory.

Achieving the desired academic outcome may require motivating students to blog. Sim and Hew (2010) reveal there are two forms of motivation that have been used. A person who performs in response to external factors such as the fear of punitive actions or promise of positive yields (e.g., good grades) would be deemed extrinsically motivated. In contrast, a person who chooses to act due to inner factors such as the desire to learn or love of learning would be deemed intrinsically motivated (Sim & Hew, 2010). They feel, however, that requiring blogging may be needed to involve students in the technology who might not have otherwise participated. Michaelson and Black (1994) suggest that it is important to stimulate students to blog just as they must be encouraged to participate in other classroom activities. When they accept that responsibility, learning may be enhanced.

Jimoyiannis and Angelaina (2012) have outlined rules to promote good practices in educational blogging. These include: (a) offering opportunities to all students to familiarize themselves with the blogging concept and related principles; (b) designing and organizing the blog both technically and pedagogically; (c) consistently monitoring the blog; (d) encouraging all students to debate by identifying and supporting those who are shy to participate; (e) requiring mandatory writing assignments; and (f) describing and determining students' assessment based on their level of participation in the blog. Through the use of these guidelines, blogging can

serve as a platform to assist nursing faculty to facilitate students' understanding of professional communication (Schmitt, Sims-Giddens, & Booth, 2012).

Yang and Chang (2012) conducted a study to explore the use of blogs and how they affect learning engagement. Their research contrasted two styles of blogging: solitary blogs as digital portfolios and interactive blogs that facilitated peer interaction by exposing blogging content and comments to peers. The results showed that while the interactive blogs were associated with positive attitudes towards academic achievement, students showed positive motivation to learn from peer work whether the blogs were interactive or solitary.

The swift expansion of the availability of social media has created a debate among college professors, and nursing professors in particular, as to its place in pedagogy. Mallow and Gilje (1999) questioned the impact of technology within nursing curricula on the students' ability to attain and develop critical thinking, caring, communication and socialization into the nursing role. There is a growing discussion in the nursing literature about this topic. The relationship between blogging pre-class and engaging students in the classroom has not been explored in baccalaureate nursing education. This proposed study expanded the investigation into using technology as a vehicle for increasing students' clinical reasoning with case studies as a basis for the blogs.

Moran, Seaman and Tinti-Kane (2011) conducted a survey that revealed "nearly two thirds of all teaching faculty have used social media in their class sessions and 30% have posted content for students to view outside class" (p.11). This positive relationship with social media provides a chance for educators to communicate with students in a way they are likely to be

reached (Browning, Gerlich & Westermann, 2011). The challenge to professors is to find a way for students to participate in the learning process while using blogging.

Cobanoglu and Berezina (2011) analyzed the impact of using blogs on students' engagement in an assignment. They incorporated a blog posting assignment for half of the semester and a similar paper assignment for the other half. The participants were 52 undergraduate students enrolled in an advanced level hospitality technology class in a northeastern university setting. They measured the number of words in the submitted work as an indicator of engagement. Their findings showed that students felt more comfortable posting on a blog than handing in a paper report. In addition, students reported that they would not have done the assignment if credit was not given. Their conclusion was that "instructors might use blogs as an interactive way of discussing class materials outside of the classroom" (p. 104).

Several studies have been cited in the literature about student engagement with blogging. Braxton, Milem, and Sullivan (2000) stated that research on active learning strategies suggested that when students are dynamically involved in thinking about what they do, there are improved outcomes. This reflects a common theme of the challenge of participation to capture the "culture of engagement" (Junco, Heiberger, & Loken, 2011). Lenhart and Fox (2006) point out that blogs are viewed as having the potential for increasing student engagement and providing an environment for collaboration and creation of knowledge.

Al-Fadda and Al-Yahya (2010) conducted a study in Saudi Arabia that used a blog written by an instructor, commented on by English as a Second Language (ESL) and engineering students, and read by both students and instructor to prepare for class discussion. The survey administered mid-semester proved that blogging was effective and encouraged reading. They

also pointed out that posting blogs supported reflection on class experiences. The ESL classes were smaller and had a more mature population using the discussion board. The engineering students noted that there was little interaction between students on the blog site. Their large class size proved problematic and decreased the presence of the instructor on the blog site for reflection and interaction.

Davi, Frydenberg and Gulati (2007) used business education courses to post discussion questions following required readings. Students were encouraged to respond and reflect on each other's postings. A mixed method approach was used. Students in the study reported that "the blog helped facilitate meaningful class discussions by 'kick starting' the conversation, ensuring class participation, and fostering more informed class discussions" (p.226). They concluded that any discipline can use blogs to begin conversations about course materials before students arrive in the classroom and continue them long after a class has ended, thus fostering a sense of active learning both inside and outside the classroom.

Epstein and Ray (2014) looked at nursing students' experiences when blogging while in the classroom. The professor posted a question and the students posted their answers during class time. All of the students were required to post at least once. They found a negative response to this practice. The students complained that blogging during class time disrupted their thinking and learning. This was also the finding of Mistry (2011) who reported that simultaneous tweeting during class time created anxiety among the instructor and the students. Fox and Varadarajan (2011) found that using microblogging in the classroom was at times distracting and confusing. The proposed study examined blogging prior to class.

Halie, Lee, Paulus, and Spence (2010) conducted a study of blogging with an undergraduate nutrition course with 67 students. They found that a sense of community and computer expertise was identified as significant predictors of perceived learning when controlled for age, gender, and previous blogging experience. While most of the participants stated that blogging enhanced their learning and led them to think about course concepts when out of the classroom, they did not find as much value in their peers' comments on their blogs.

Schroeder, Minocha, and Schneider (2010) conducted a study that looked at how students in the United Kingdom use blogs as online reflective diaries. Their findings showed that social software encouraged the building of social relationships, improved learning, and enhanced communication between students and educators. The weaknesses were: increased workload issues of educators and students; limitations in the quality of interaction; and uncertainties of ownership and assessment.

Yang and Chang (2012) led a quasi-experimental study in Taiwan using a repeated measures design where the control group was comprised of students participating in the solitary use of blogs and the experimental group had students with the interactive use of blogs. Participants were electronics majors and used the blogs when they were not in class. They demonstrated "that interactive blogs, compared with isolated blogs, are associated with positive attitudes towards academic achievement in course subjects and in online peer interaction. Students exhibited a positive motivation to learn from peer work, irrespective of whether blogs were interactive or solitary.

Park (2013) analyzed the use of Web 2.0 tools such as blogging to promote reading engagement in a general education course. There was a sizable discussion related to the

application of Self-Determination Theory as an explanation of student motivation. Park separated it into intrinsic motivation which explained involvement in activities for the sake of inner pleasure and satisfaction and extrinsic motivation which was derived from the self or behavior that is autonomous. Hence, the following are defined:

- External motivation: behaviors performed to achieve a reward or avoid a punishment.
- Introjected motivation: behaviors performed to avoid a feeling of guilt or attain a sense of self-worth
- Identified motivation: activities are considered valuable or personally important.
- Integrated motivation: identified value of an activity is integrated into the self. (p. 48)

It was Park's conclusion that self-directed motivation must be promoted for high-quality learning performance and learning. He showed that Web 2.0 technologies such as blogging shared characteristics that assist with support for autonomy which promoted student engagement. The integration of the technology enhanced student active engagement with reading materials.

Li (2005) showed that there are six predictors of blogging behavior that demonstrate patterns and motivation. These forecast self-presentation and readership expectation and include: self-documentation, improved writing motivation, self-expression, medium appeal motivation, information motivation and socialization motivation. Through the understanding of these predictors, the blogging assignment can be designed to tap into the student's underlying incentive to participate in the technology.

Higdon and Topaz (2009) developed a unique methodology to use blogging to promote a deeper conceptual understanding of the course materials that would be transferable to contexts outside of the classroom. During the evening prior to the class, the students were asked to

respond to two questions on the learning management system. They were: 1. what is the most difficult part of the material we will discuss in tomorrow's class? 2. What is the most interesting part of the material? The instructor scans through the comments to identify themes and areas of difficulty and then allowed class time to address the issues. They found that the study was able "to increase the amount of effortful time that students spend working with the material, providing increased opportunities for feedback and more time to learn" (p. 108).

Student Engagement

The notion that student engagement is essential to the learning process was originated in the writings of John Dewey (1916). Dewey proposed that students only truly learn when they want to learn, when they show interest in their subject and it is relevant in their lives (Kim, Glassman & Ray, 2015). Coates (2005) stated that studying "student engagement comes close to providing necessary and sufficient information about student learning" (p. 32). In creating a model of student engagement as it related to learning, Coates (2007) categorized engagement into four styles that related to "transient states" (p. 132). The styles are: intense, collaborative, independent and passive.

The "intense state" indicated a high involvement with university study. Students using the intense style tended "to use learning management systems more than others to enhance and contextualize their study, to communicate and collaborate with other students, to manage and conduct learning and to contact staff. They were disposed to see professors as approachable and to view their learning environment as responsive, supportive and challenging (Coates, 2007).

The independently engaged state was aligned with students who had a more academic and less socially-oriented approach to study (Coates, 2007). Online systems are viewed as a significant part of their education, playing an influential role in their knowledge construction and providing broad forms of support. They were less likely to collaborate or interact with other students when using learning management systems or to initiate contact with staff (Coates, 2007).

The collaborative and passive engagement states are the opposite of the others. Collaborative students tend to be more socially active in university life as opposed to the more purely intellectual or personal forms of interaction. Passive students will rarely participate in activities that produce learning (Coates, 2007).

These engagement states are essential to understand in relation to the incorporation of the blogging assignment and its impact on their states. Since Coates identifies these states as transient, it may be possible to impact both the passive and collaborative learners to increase engagement through technology.

Kahu (2013) identified four dominant research perspectives on student engagement. These were: behavioral which encompasses student behavior and institutional practice; psychological which sees engagement as an individual psycho-social process; sociocultural which emphasizes the socio-political context; and holistic which takes a broad view of engagement. The behavioral perspective is directly related to student satisfaction and achievement, including attention to learning and the impact of teaching practices. Many engagement instruments concentrate on the behavioral aspect such as the National Survey of Student Engagement. The psychological perspective envisions engagement as an internal

psychosocial process that grows over time. This outlook incorporates the history of the student and its impact on engagement. The socio-cultural perspective focuses on the impact of the academic culture on student engagement. Finally, the holistic perspective takes each of the other viewpoints and produces a wider perception of the concept. Bryson and Hand (2007) use this concept when they state that engagement is a dynamic continuum taking place in different locations such as tasks, classroom and institution. The development of the Engaged Learning Index attempted to address the different perspectives in the tool.

Bruce, Omne-Ponten, and Gustavsson (2010) analyzed active and emotional student engagement in a Swedish national study of nursing students. They felt that from a health perspective, student engagement indicates affirmative or optimal functioning and is a positive emotion. They separated engagement into active and emotional attributes. Active engagement was also referred to as behavioral engagement that “is dynamic participation in a learning activity as a result of genuine interest and motivation in the studies” (p. 2). Emotional engagement is “a more affective-cognitive state, that influences commitment and how the students feel and think about the education and learning tasks” (p. 2). The researchers found that student engagement resulted in a “spiral of gain” (p. 10) that enabled the students to access the resources available and increase their ability to deal with stress in college (Bruce et al., 2010).

Karasksha et al. (2013) stated that student engagement is not a “one size fits all” way of thinking. Radlof and Coates (2009) see it as a concept that helps to guide what can become good practice. Student engagement focuses on the scope of involvement in activities that are associated with beneficial learning outcomes (Krause & Coates, 2008). When education is

basically about students constructing their own knowledge base, it identifies a constructivist view in engagement research (Krause & Coates, 2008).

Alarcon, Edwards and Menke (2011) identified conscientiousness as an important resource in promoting student engagement. This can be achieved through social support which will help to forecast problem-focused coping tactics. The use of interaction in the learning management system can provide a social support network and encourage conscientiousness in preparation and engagement. Alghamdi (2013) conducted a study utilizing a discussion board to improve learning in an undergraduate course at an international university in Saudi Arabia. While posting to the board showed test score improvement, the qualitative results indicated that the use of an online learning management system increased their self-esteem and helped them to make connections of the classroom material to their lives. There was growth in motivation and engagement. The sample was 155 female students in a professional development and competencies course and they reported an increase in social support that made them more able to discuss all issues related to the class without embarrassment.

The exploration of nursing student engagement has taken different avenues. It is important to look at the student engagement process in cognitive, behavioral and emotional learning in the undergraduate nursing curriculum (D'Souza, Sheila, Venkatesaperumal, Radhakrishnan & Balachandran, 2013). They conducted an exploratory cross-sectional research study of 250 nursing students in Oman. While findings showed higher engagement in the clinical arena, they found that nurse educators should incorporate active and collaborative learning strategies in classroom teaching in order to engage nursing students.

Salamonson, Andrew, and Everett (2009) explored the impact of homework on academic engagement in nursing students taking pathophysiology classes. They found that the amount of time students spend in learning-related activities has been identified as a critical element of academic engagement. In the study, students were required to: attend tutorials; prepare for class by looking up resources that were listed on their pre-reading list; and complete a worksheet. They were given credit by a tutor for completed homework. Results showed that activities that promote active learning were strongly associated with academic success. Findings encouraged professors to design learning methods to promote academic engagement.

Bulger, Mayer, Almeroth, and Blau (2008) examined the impact of computer-equipped college classrooms that use simulation exercises during class on learner engagement of freshmen enrolled in a composition course in a university setting. Their premise was based on Ames and Archer's (1988) statement that "Students demonstrating cognitive strategies such as task-mastery goals report higher levels of engagement and perform better on assigned tasks" (p. 131). This study showed that student engagement is related to instructional method of simulation. They used several ways to promote active learning including: (a) assigning collaborative work with an in-class deliverable; (b) requiring students to research background information outside of class time; (c) supporting the formation of learning connections with resources; and (d) encouraging self-development of understanding of class material.

Crookes, Crookes, and Walsh (2013) conducted a literature review to identify meaningful and engaging teaching techniques for nursing students. They wrote about the importance nursing students place on practical application and the relevancy of content. A survey of nurse educators disclosed that undergraduate students are often only willing to engage with topics if they can see

the implications of and/or the application to their clinical practice. A review of ten articles that looked at the use of technology and online tools to incite student engagement articulated the need for a break from traditional methods of teaching (Tremel, 2004).

There were two benefits that were given to technology and online tools. The first benefit is that such techniques are said to improve student interest and ability in the classroom, in that they have the potential to increase student retention, motivation, class participation, learning, critical thinking and enhanced clinical education. The second benefit is the capacity to inform and create good nursing practice through explicitly linking theory with practice (p. 241).

An exploration of educational principles that relate to student engagement and the implementation of technology are important. Several theorists speak to academic involvement and different ways to present classroom material.

Educational Principles

Paolo Freire (1970) wrote against using a “banking” approach to education. This style describes the teacher as a “depositor”, who puts information into the student and sees the student as an empty object that needs to be filled. He believed that the banking approach will never encourage students to think critically (p. 74). His method promoted a dialogue between the teacher and students to encourage critical thinking. “If educational programming is dialogical, the teacher-students also have the right to participate by including themes not previously suggested” (p.120). The challenge is to set up an educational environment that encourages dialogue and thinking, and increases knowledge development. This can be done by posing problems, such as case scenarios,

which creates a learning partnership, and letting the students reason through with answers to problems that the case poses.

Freire's method aimed to empower learners to be actors in their own lives and societies. He emphasized the importance of dialogue and active participation in the process of learning (Williams & Chinn, 2009). His theory states that true learning occurs through participation in dialogue between inquiring equals. The goal of the dialogue is to define problems and pose questions in such a way as to allow the learners to think about what caused the problem and come up with solutions to solve it.

Herbert A. Simon is quoted as saying "Learning results from what the student does and thinks, and only from what the student does and thinks. The teacher can advance learning only by influencing the student to learn" (quoted in Ambrose, Bridges, DiPietro, Lovett, Norman & Mayer, 2010, p.1). The integration of techniques that inspire the student to learn by doing will create a student-centered format rather than a teacher-centered one that encourages passivity. This notion is reinforced by Kain (2003) who reiterates that student-centered approaches focusing on development of knowledge is shared, and learning is achieved through learner's engagement in activities.

Malcolm Knowles (1970) developed the notion of adult-focused education that he termed andragogy. He juxtaposed the ways in which adults and children learn, which he named pedagogy and andragogy (Norrie & Dalby, 2007). Pedagogy was seen as a passive approach, because the learners tend to be dependent, have little personal experience and are mainly motivated by outside forces. Andragogy saw the learner as a more active participant. Knowles (1970) identified six core learning principles:

1. *The learner's need to know*: if learners are aware of why a topic is important, that will be a strong motivator to their learning.
2. *The learner's self-concept*: adult learners take responsibility for their own learning. Placing the learners in dependent situations will promote resistance and conflict.
3. *The role of the learner's experience*: the learners themselves become an important resource for learning. Their experience is an important motivator.
4. *The learner's readiness to learn*: adults are ready to learn about topics that become of use to them as they develop personally; for example, empathic responses and counselling become relevant after learners have themselves been in situations which require them.
5. *Orientation to learning*: Knowles describes the learners as being "life-centered" (1998:67). This implies that students learn more effectively when presented with real-life situations, for example using the impetus of exposure to new clinical practice.
6. *Motivation*: internal motivation to keep growing and developing should be fostered, by following principles of adult learning.

Norrie and Dalby (2007) conducted a quantitative study of students in a nursing program in the United Kingdom that looked for the self-reported evolution of adult learning principles. They found that students had a tendency to be less active in their own learning over time. They became more passive recipients of knowledge than seeking out information on their own. The researchers felt that this should be further studied and had implications for higher education.

Jinks (1999) performed a qualitative study of nursing educators and their perceptions of student-centeredness in Wales. Student-centeredness denotes a spectrum of teaching and learning

methods such as “self-directed learning, experiential and problem-solving approaches” (p. 224). He found that andragogy, which is based on a belief system that cedes status and responsibilities to students as adult learners, makes it an appropriate paradigm for nursing education.

Banning (2008) identified metacognition as the process that nurses need to use for clinical reasoning and reflection. It is awareness of one’s own thinking process. Kuiper and Pesut (2004) felt that for metacognition to be effective in nursing students, it should go further than an awareness of their thinking and progress to advanced levels of self-correction and self-efficacy. “Effective clinical reasoning can be achieved as the cognitive and metacognitive aspects of critical and reflective thinking in nursing practice are developed” (p. 382).

Kong, Qin, Zhou, Mou, and Gao (2014) conducted a meta-analysis on the effectiveness of problem-based learning on development of critical thinking in nursing students. Although their sample size was limited, their review showed an improvement in critical thinking with the use of problem-based learning when compared with traditional lecture formats.

For a long time, the collegiate world has embraced pedagogical principles to design their curricula and instruction techniques. While there are certainly aspects of this approach that work quite well in nursing education, pedagogy does promote an atmosphere of dependence and expectation of a didactic lecture format. With andragogy, learning is self-directed and the educator motivates the student to utilize their experiences to support the performance needs of the learners. The use of social media and blogging in classroom preparation can be viewed to be aligned with andragogy; the actual classroom experience can build on their prior work to present theories and encourage participation.

The theory of constructivism stems from andragogy and addresses the transfer of the learning responsibility from the teacher to the student. An important principle of the philosophy

is its highlighting of the role of social interaction among people which impacts mental processes and helps construct information (Ali, Hodson-Carlton, & Ryan, 2004). The learner is encouraged to construct their body of knowledge from their experience and apply it to a variety of situations.

The application of constructivism which highlights the construction of new knowledge by the student, as well as an emphasis on active learner-centered experiences (Kala, Isaramalai, & Pohthong, 2010) is useful to encourage knowledge acquisition and clinical reasoning skills. Using an approach that incorporates technology has the potential to facilitate nursing student engagement and enable them to create new knowledge for themselves (Kala et al., 2010). There are three factors that can have an impact on the effectiveness of Web 2.0 technology and constructivism. These are: confidence in using a computer; reliability and validity of the evaluation instrument used to assess outcomes; and quality of the materials (Kala et al., 2010).

The constructivist viewpoint is seen in on-line course development and blended learning strategies in nursing education. The use of case studies, concept mapping and reflection occurring during simulation and clinical experiences are all evidence of linkages to constructivist theory (Handwerker, 2012). There are several examples in the literature of unfolding case studies that require problem-solving and the development of clinical reasoning on discussion boards using Web 2.0 technology (Handwerker, 2012; Hsu, 2011; Porter-Wenzlaff, 2013).

Active Learning

In the Greenwood Dictionary of Education, active learning has been defined as “the process of having students engage in some activity that forces them to reflect upon ideas and how they are using those ideas; the process of keeping students mentally, and often physically, active in their learning through activities that involve them in gathering information, thinking, and problem

solving” (as cited in Michael, 2006). This practice is used when employing technology-enhanced learning activities. An example of this type of learning through self-direction is with the use of discussion with classmates and the professor by blogging on the learning management system of the college.

Michael and Modell (2003) discuss the active learning process as building mental models of the subject matter. Then the student will manipulate the material to decide if it fits the scenario or not. In this way, scholars will be more likely to be achieving meaningful learning.

Prince (2004) points out that promoting student engagement is an important aspect of active learning. This can be done by using activities that are developed around essential learning outcomes and promote thoughtful student engagement. He stated, “Adopting instructional practices that engage students in the learning process is the defining feature of active learning” (p. 4). While he cites studies that involve the classroom environment, this concept can be applied to the use of pre-class engagement activities. If the assignment is designed to stimulate the thinking process and the instructor uses those activities in the classroom, engagement can occur.

There are several ways identified in the literature in which active learning can be realized or accomplished. Among these are: problem-based learning, case studies, simulations, role-playing, conceptually oriented tasks, cooperative learning, and inquiry-based projects (Prince, 2004; Michael, 2006). Prince (2004) identified the basic elements of active learning to be “introducing activities into the traditional lecture and promoting student engagement” (p. 3). Several studies looked at the way active learning strategies impacted learning and student outcomes. Case studies, such as the ones used in the implementation of this study, have been utilized for years in nursing, medicine, law and other professional education programs.

McCurry and Martins (2010) implemented a mixture of innovative activities in a nursing research class. They used worksheets for collaborative learning, oral group presentations, and a research project that coordinated with a clinical course. The assignments were compared with a class that used traditional activities such as quizzes and a critique of a published nursing research article. Their data analysis showed a statistically significant difference between the classes when looking at effectiveness of the active learning assignments meeting course objectives.

Student writing is also a feature of active learning implementations. Writing about a concept requires an examination and organization of thinking that will lead to making connections between concepts (Bangert-Drowns, Hurley, & Wilkinson, 2004). Writing effectively has the potential to improve student learning. Linton, Pangle, Wyatt, Powell and Sherwood (2014) stated that there are some studies which did not find any effect of writing on student learning (Armstrong, Wallace, & Chang, 2008; Fry and Villagomez, 2012). They encouraged researchers to focus on the most effective implementation strategies for writing inside and outside the classroom. In their study, they found “individual student writing not only provides formative assessment data but also promotes metacognition, as students are confronted with trying to organize the understanding of concepts, making connections, and justifying their thinking” (Linton et al., 2014, p. 475).

Active learning strategies can include the use of a game. Boctor (2013) stated that active, engaging learning activities that are student centered are preferred by millennial students over teacher-centered approaches such as lectures. This study used a game called “Nursopardy.” This was based on a concept used in the game show, Jeopardy. The students were placed into teams to collaborate on questions to posed answers. This strategy used the students’ ability to work together, think critically and analyze others’ contributions. A similar approach can be

implemented on the discussion board when the students use case studies to answer questions. It also calls upon students to think critically and review the other comments.

Learning Styles

Addressing the different learning styles of nursing students is an important part of their engagement level and ability to clinically reason. Conventional theories point to the three types of learners as visual, auditory, and kinesthetic (Blevins, 2014). Visual learners are more comfortable with the use of sight, preferring an environment that is quiet and allows for concentration when analyzing written information. They favor handouts and presentations that include graphics and illustrations (Blevins, 2014). Auditory learners are at ease when listening to the information, discussing its impact and participating in study groups. Kinesthetic learners are hands-on and learn the material best when physically involved in the application. They prefer simulations and role-playing. Herrman (2008) identified the majority of students are visual learners. Blogging answers to a case study on line appeals to visual learners.

Dunn and Griggs (1998) developed a Learning-Style Model that refers to learning style as the way individuals start to incorporate and remember new and challenging academic topics and skills. They defined style by the students' reactions to learning in their immediate environment; environmentally through their preferences for sound, light, temperature and/or design; emotionally through motivation and persistence; sociologically when they state a preference to learning alone or in a group; physiologically as evidenced by perceptual preferences; and global versus analytic processing.

They further delineated the differences in style by four variables. The first one is academic achievement. Gifted and underachieving students have different learning styles and do

not learn well with the same methods. Gender also plays a part. “Males tend to be more visual, tactual, and kinesthetic and need mobility in an informal environment. Females tend to be auditory, conforming and better able to sit passively in conventional classrooms (Dunn & Griggs, 1998, p. 16). They also found that learning styles change as they continue in school and grow older. The last variable is cognitive processing style. Learning persistently, with very few interruptions in a quiet setting, reflects an analytic student. Others, who learn best by using breaks and having soft lighting with sound in the environment, are associated with high-global learning (Griggs & Griggs, 1994).

Kolb (1984) has identified four distinct learning styles that have been associated with developing clinical reasoning. These are: converger, diverger, assimilator, and accommodator. Convergents tend to desire a single solution and shine when applying ideas to practical situations. They are more comfortable with technical tasks than interpersonal learning. Divergent learning involves working with a plethora of ideas and using imagination to come to a conclusion. They tend to be sensitive and people-orientated. Assimilators tend to develop their own theoretical model and use inductive reasoning. They preferred distance learning. These students are best at organizing and presenting information in a clear and logical format. Accommodators tend to best learn when carrying out experiments and are more apt to be risk takers. They are attracted to new challenges. They are also people-oriented and active learners (Rassool & Rawaf, 2007).

In one study by Gyeong and Myung (2008), the majority of nursing students showed a combination of learning styles with most of the students using diverging and accommodating. It should be noted that this study was conducted in Korea and may have reflected a cultural impact. A similar study ran in Scotland (Currie, Bannerman, Howatson, MacLeod, Mayne, Organ, Renton, & Scott, 2015) and showed the opposite was true. Most of their students were

converging assimilators. It would be interesting to perform a similar study on American students to see what their preference would be.

Kolb (1984) defined learning as a dynamic process of adaptation and deep understanding of knowledge. The effective and balanced student should use all of the styles as a cycle of learning. They should experience the situation, think about it, develop insights about it and then try out their conclusions (Andreou, Papastavrou, & Merkouris, 2014). The presentation of the information to stimulate this cycle should be engaging and able to facilitate the transformation. Andreou and colleagues (2014) point out that “the nature of the relationship between learning styles and critical thinking is embedded in such a potential educational environment where educators reclaim all learning styles in planning, delivering and feed-backing on their instructions toward critical thinking” (p. 369). This philosophy concurs with the use of case studies as a pre-class assignment to experience the situation, think about it, develop an understanding of the information and try it out in a technology-enhanced environment. The feedback provided during the classroom lecture time assists in improvement of clinical reasoning skills.

Honey and Mumford (2000) created a learning-styles questionnaire that was based upon Kolb’s model. They identified four learning styles: activist, reflector, theorist, and pragmatist. Activists are ruled by new experiences and are present-oriented. They like to try out new challenges and be the center of attention. Reflectors are observant and tend to analyze the various aspects before taking action. Theorists are more structured and rational in their approach to problem-solving. They do not cope well with vague instructions or emotional emphases. Pragmatists enjoy trying out ideas and techniques in a real-world arena. They like making decisions and solving problems. These styles have been placed into an experience cycle where

the activist has an experience; then the reflector reviews the experience; the theorist concludes from the experience; and then the pragmatist plans the next steps (Rassool & Rawaf, 2007). This cycle can be documented in a technology-enhanced learning activity such as blogging. The case study serves as the experience and the students' reactions reflect their style.

Noble, Miller and Heckman (2008) studied the cognitive style of nursing students from the perspective of field preference. Field preference has been described by a learner's approach to the perception, acquisition, processing, organization and application of information (Messick, 1984). This has been divided into field dependency and field independency. Field-dependent learners use or depend on the context in which information is obtained. They learn best in a highly structured and organized environment when content is presented. It has been found that field-dependent students do not learn well in a lecture environment since they are unable to interact with the instructor. They learn best in groups with a social exchange of information. Field-independent learners prefer an impersonal lecture environment and autonomy when learning. They do not see interaction with others as a part of their own learning process. Noble and colleagues (2008) found that the undergraduate generic nursing students they studied were split evenly between each style. They concluded that professors should provide enhanced learning activities from which each student, whether field-dependent or independent, can select.

Net Generation

The challenge of nursing education is adapting to the characteristics of the "net generation". Metcalfe and Putnam (2013) point out that those students born after 1980 have never known life without the internet. Tapscott (2009) stated, "Each generation is exposed to a unique set of

events that defines their place in history and shapes their outlook” (p. 16). The most important change that affects this generation is the evolution of the computer, the internet, and other technologies. This is the first time in recent history that most of the younger generation are more comfortable, knowledgeable and literate than their parents and teachers about an innovation that is central to the culture. He refers to this group as “the Net Generation, the first to be bathed in bits” (Tapscott, 2009, p. 17). In this study, 147 out of 153 students identified themselves as being born after 1980.

Drawing from his research with 7,600 net generation members throughout the globe, Tapscott (2009) described eight ways in which they differ from their parents and teachers:

1. They want freedom of expression and choice;
2. They love to customize and personalize all aspects of their world;
3. They are the new scrutinizers and demand transparency;
4. They look for corporate integrity and openness in their purchasing decisions;
5. They want entertainment and fun in their work, education and social life;
6. They are a collaborative and relationship-oriented generation;
7. They have a need for speed with technology; and
8. They are innovators (p. 34-36).

Another term that is used to describe this group is a “digital native.” Karaksha and colleagues (2013) state that these students have novel learning styles that are nonlinear and approaches need to be individualized for learning needs. They need more than customary teaching methods to engage in the learning process. This is where technology can provide advantages and innovation for this group.

Baird and Fisher (2005) wrote that since online learners have grown up with the digital world, they have new methods to understand, learn, and process information. This has produced a softening line between frontline and online education (Baird & Fisher, 2005).

The current generation of learners is “hardwired to simultaneously utilize multiple types of Web-based participatory media. This is a technologically savvy generation of learners who have no concept of using the 26-volume set of encyclopedias. They have grown up with the Web, are “always-on,” and expect to utilize technology in their learning.

Students, especially on college campuses, are perpetually connected to their peers, professors, and course content through laptops, social networks, PDAs and iPods (p. 10).

McCurry and Martins (2010) write that millennial learners’ view is more global and multicultural. Their life experiences include the tragedies of September 11, 2001, wars against terrorism, and patriotism. Howe and Strauss (2006) point out those adjectives most often used to describe them are: sheltered, special, confident, team-oriented, achieving, pressured and conventional. The use of technology-enhanced learning activities takes these characteristics into account when engaging them.

It is not just the net generation that is a challenge. As Worley (2011) reveals, “it is not unusual to find an older student who is tech savvy or a young student who is less advanced” (p. 33). But whatever their age group, Tagg (2008) suggests that the average student enrolled in college today is diverse in attitudes, outlooks, capabilities, knowledge, and aims from those of previous decades. Oblinger and Oblinger (2005) point out that age may be less important to consider than their exposure to technology. Feiertag and Berge (2008) said, “Many people in older generations may incorrectly assume that Gen N (net generation) understands and uses all

computer applications when, in reality, the opposite is true. Typical of human nature, members of Gen N know what they need (or want) to know and little else” (p. 459).

Arhin (2007) stated that these net students prefer to be active participants in learning. They value doing rather than knowing (Mangold, 2007) and see the professor as someone with expertise rather than an expert (McCurry & Martins, 2010). Part of the role of the nursing professor is to help students prepare for a future where the pace of change will continue to accelerate in technology applications (Sherman, 2009). If the strengths that Net Generation students bring to the classroom can be capitalized upon, then their clinical reasoning skills can be strongly developed.

The challenge for faculty who teach the present student population is understanding their learning styles. Worley (2011) points out that they are social and team-oriented. They look for constant feedback and have interpersonal skills that work well in groups. Feiertag and Berge (2008) state that they want to contribute to the discussion about how they will learn. This encourages educators to include approaches to teaching that use team learning technology. Blogging on a social media platform allows students to post their answers while providing an avenue for feedback from fellow students and professor. E-learning or the use of electronic media within the learning experience has many advantages for the millennial learners. There is increased accessibility to educational materials at their convenience, personalized instruction that addresses their individual needs and standardization of content (Cook, Levinson, Garside, Dupras, Erwin, & Montori, 2008).

The National Council of State Boards of Nursing (2007) supports the use of interactive learning strategies and recognizes the integration of experiential learning, the expanded use of

learning technology, outcome-based education and evidence-based education strategies. Students present a unique challenge to nursing education that expects faculty to employ new teaching strategies to acquire and maintain their attention both inside and outside of the classroom.

Clinical Reasoning

The clinical case studies utilized for the blog assignments in the current study use questions that are designed to elicit clinical reasoning from the nursing students on a fundamental level. The concept of clinical reasoning is explored in this section.

Benner, Sutphen, Leonard, and Day state in their book, *Educating Nurses: A Call for Radical Transformation* (2010), there needs to be a shift in presentation from didactic and rote memorization to clinical reasoning skills that will give the graduate the ability to function in a rapidly changing health care system. Technology has an unfulfilled potential to become a cognitive tool that advances students' clinical reasoning skills, rather than simply making traditional learning tasks easier (Lindquist & Long, 2011).

Pinnock and Welch (2014) identify the key components of clinical reasoning as “content knowledge and the cognitive processes of problem solving” (p. 254). The knowledge required to make decisions consists of declarative statements which demonstrate the command of facts, rules and strategies. These can be taught in a classroom but the use of technology through case studies has the potential to enhance the retention and lead to the second element of problem-solving. The key to developing the skill of clinical reasoning is practice and presenting a variety of educational activities to enhance the development.

The concept of clinical reasoning has been further explored by Levett-Jones and colleagues (2010). They encourage nursing education to provide students with opportunities to reflect on and question their preconceived notions and prejudices. Proficient practice needs skills as well as the ability to think like a nurse. Thompson, Cullum, McCaughan, Sheldon, and Raynor (2004) point out nurses are responsible for many of the judgments and decisions throughout health care delivery. As soon as they start their first position, nurses are required to make complex decisions about patients (Lasater, 2007). Effective clinical reasoning skills have an impact on patient outcomes and the prevention of deterioration (Aiken, Clarke, Cheung, Sloane, & Sliber, 2003, Levett-Jones et al., 2010). A study by Blegen, Goode and Park (2013) showed that hospitals with a higher percentage of nurses with baccalaureate degrees or higher had lower congestive heart failure mortality, decubitus ulcers, failure to rescue, and postoperative deep vein thrombosis or pulmonary embolism and shorter length of stay. This demonstrated the influence that education levels have on hospital mortality rates.

In the article, *The Five Rights of Clinical Reasoning: An Educational Model to Enhance Nursing Students' Ability to Identify and Manage Clinically 'At Risk' Patients* (Levitt-Jones et al., 2010), clinical reasoning is defined as: the process by which nurses collect cues, process the information, understand the problems, plan and implement interventions, evaluate the outcomes and reflect in order to learn from the process. "Effective clinical reasoning depends upon the nurse's ability to collect the right cues and to take the right action for the right patient at the right time and for the right reason" (p. 517).

While it is important to make certain that the theories and concepts essential to providing competent nursing care are taught, combining andragogy and pedagogy through the use of social

media may produce students who are more engaged in the learning process. Educating through the use of various modalities may foster the nursing students' ability to reason and problem solve which can be translated into their clinical practice. Benner et al. (2010) discusses the use of clinical reasoning in the development of nurses from novice to expert. They state that "thinking like a nurse requires clinical reasoning, as well as critical, creative, scientific and formal criterial reasoning." (Benner et al., 2010, p. 85-86). It seems logical, then, to expand beyond the classroom walls and engage students in the social media domain. Utilizing an approach that requires students to access materials prior to classroom presentations and then respond through blogging or twitter may result in more opportunities to engage in clinical reasoning.

The *Future of Nursing* report by the Institute of Medicine, published in 2011, stated the following:

The explosion of knowledge and decision-science technology also is changing the way health professionals' access, process, and use information. No longer is rote memorization an option. There simply are not enough hours in the day or years in an undergraduate program to continue compressing all available information into the curriculum. New approaches must be developed for evaluating curricula and presenting fundamental concepts that can be applied in many different situations rather than requiring students to memorize different lists of facts and information for each situation. (p. 191)

This statement pleads with nursing faculty to embrace new ideas and technologies to reach out to the students and find ways to expose them to an ever-evolving health care system.

Del Bueno (2005) points out that while nursing education puts an emphasis on teaching content in the curriculum, there is a lack of focus on use or application of knowledge in patient situations. Clinical reasoning can be used as a measure of cognitive skills because it includes the metacognitive process of reflective thinking (Kuiper, 2013). “When these skills are situated in scenarios, the appropriate choice of nursing interventions can be framed for each particular patient” (Kuiper, 2013, p. 131).

Summary

The literature review revealed a gap in the study of the use of technology-enhanced learning activities, specifically blogging, in nursing curricula. The nursing students in the net generation look for educational experiences that incorporate their ability to multi-task and work in groups. Combining the use of technology with stimulating clinical reasoning development and blogging to case study questions has the potential to fill the gap and provide professors with an innovative way to reach their students. Students must be seen as active participants in their own learning. This can be accomplished using andragogical theory and constructivism. Active learning which encourages the coursework to be presented as student-centered rather than teacher-centered creates an atmosphere of inquiry and engagement. This investigation into learning styles reveals that nursing students use a variety of approaches to understand and utilize the information provided in the classroom and in assignments. Utilizing the Web 2.0 technology through blogging on a learning management system can help to make the students partners in their own learning and apply clinical reasoning skills in a variety of situations and formats. Chapter three will present the research design and methodology.

CHAPTER III

RESEARCH DESIGN AND METHODOLOGY

Introduction

The purpose of this quasi-experimental study was to examine the impact of blogging assignments prior to class on nursing student engagement. The student participants were at the sophomore level, enrolled in a fundamentals of nursing course. The study was conducted at a private college. The classes were divided into three control groups and three intervention groups. The control groups took the course as historically offered without blogging. The intervention groups had the blogging assignment each week over an eight week period. It was anticipated that there would be a difference between the pre-class assignments on the students' self-reported engagement in the classroom.

This chapter is divided into four sections. The first section describes the subjects that were selected for the study. The second section describes the preparation of the faculty for the technology used and their adherence to the study protocol. The third section describes the blogging assignments for the students. The fourth section describes the survey instrument and how it was administered.

The following research questions guide this study:

Research question one

What knowledge of and prior experience with blogging do sophomore level students report?

The nursing students were separated into control and intervention groups. The control groups received the traditional reading assignments and classroom experience. The intervention groups were given a pre-class blogging assignment that uses their reading assignment and clinical reasoning skills.

Research question two

Do nursing students in control groups and intervention groups differ in their level of engagement based on the pre-test and post-test?

Research question three

How do nursing students compare on the pre-tests and post-tests within each group, control and intervention, on their level of engagement?

Research question four

What is the relationship of nursing students in a control groups and intervention groups on level of engagement, gender and age based on post-test results?

Variables

Independent variable: Use of blogging on a school sponsored learning management system.

Blogs consisted of case studies and prompting questions posted by the professor after reading a case study that related to the content that was presented the following week. The blogging assignments encouraged the use of clinical reasoning to provide a proper answer. The blogs were due each week prior to class for an eight week period. The learning management system format

was available to every student. This was beneficial as it offered them the opportunity to read each other's comments and respond.

Dependent variable: the level of engagement in the classroom. At first, a pre-test was administered to all of the intervention classes that would implement the assignments and contrast the results with those that did not. Participants were enrolled in a sophomore level fundamentals of nursing course.

Setting

This study was conducted in a private four year college in the New York metropolitan area. The program prepares baccalaureate nurses. There were 153 students enrolled in the course in the spring semester.

Selection of Subjects

The population was a convenience sample of sophomore nursing students who self-registered for the fundamentals of nursing course. The sections were taught by professors who were trained by this researcher as to how to assign and assess the blogging assignment (see Appendix A). The classes were randomly apportioned as to control and intervention status. Permission to conduct the study was obtained from the Molloy College Internal Review Board Committee (IRB) (see Appendix B). Involvement in the study was voluntary and study participants remained anonymous.

Confidentiality

The identity of study participants, nursing professors and institutions were protected so that identifying information will never be publicly revealed. The students were identified by number only on the instrument and the report of data. The instruments were kept in a locked cabinet.

Instrumentation

A survey instrument was developed by adapting questions from the Adapted Engaged Learning Index (Appendix C) and a Demographic instrument (Appendix D/E) developed by Popkess (2010). Items on the survey related to statements and beliefs the student had about the course. The survey used a Likert scale from 1 (strongly disagree) to 6 (strongly agree). The Adapted Engaged Learning Index was used as a pre and post-test for the student groups prior to the intervention and upon completion of the intervention, after 7 to 8 weeks.

Validity

For the purposes of the Adapted Engaged Learning Index instrument, student engagement was conceptualized using behavioral, psychological and cognitive aspects. Popkess (2010) had adapted this version from the Engaged Learning Index (ELI) instrument by Schreiner and Louis (2006).

The original ELI was a 10-item tool that measured the multidimensional nature of an individual student's engagement in the learning process. The instrument was originally tested on a sample of undergraduate students (N=1,270) in five different four-year colleges and universities across the United States, with an average response rate of 22% (Schreiner & Louis,

2006). They established content validity through the use of a student focus group to ensure items were clearly worded and had high face validity. Fifteen undergraduate students participated in a 90-minute focus group, whereupon the instrument was completed and each item discussed thoroughly. Revisions were made as a result of group feedback (Schreiner & Louis, 2006).

The revised ELI demonstrated preliminary evidence of construct validity that was indicated through convergent validity and through significant group differences (Schreiner & Louis, 2006). This led to preliminary evidence for primary validation as a measure of engaged learning (Schreiner & Louis, 2006).

The internal consistency of the instrument also was strong both for the total scores and each of the three scale scores. All coefficient alphas (0.74 to 0.90) were above the level expected for psychological instruments, lending support for the three scales (meaningful processing, participation and focused attention) as well as for the usefulness of the ELI as a brief but thorough measure of engaged learning for the traditional and non-traditional aged college student populations (Schreiner & Louis, 2006, p. 18).

The instrument was further edited for this research study, eliminating the words “in this course” to allow for pre-testing prior to the start of the course. The demographic component was developed to analyze gender, age and comfort level with Web 2.0 technology. A panel of five nursing professors, with expertise in the field of nursing education, juried the contents of the revised engaged learning index and demographic data sheet. The result was a unanimous conclusion that it would be appropriate for use in the study.

Reliability

The reliability of an instrument is shown by its consistency in measuring the anticipated outcome. Schreiner and Louis (2006) showed that their use of the tool resulted in reliability across multiple undergraduate populations within baccalaureate institutions. With a recommended Cronbach's Alpha of .80 to .90, the overall score was $\alpha = 0.89$. Popkess (2010) utilized data from 107 students to corroborate this finding.

Data Collection

After IRB approval had been obtained, an in-service was conducted with the fundamentals course nursing faculty to orient them to the learning management system. This system was available at the college and served to provide a system in which professors can post assignments and students can respond with their answers. The postings are chronological and identify the students. Access is denied to anyone outside of the course section. An information session (Appendix F) about posting to discussion boards was provided as well as a link to a YouTube video about how to create a discussion board in the learning management system. There was a return demonstration by the professors and a rubric was initialed which indicated understanding of the session (Appendix G). After the orientation, the faculty signed a contract (Appendix H) indicating that they understood the system and agreed to participate in the study.

The students signed a consent form (Appendix I). Then the instrument, along with a demographic assessment, was distributed and collected during the fundamental nursing classes at the baccalaureate institution. The fundamentals course was offered at the sophomore level. The classes were randomly assigned as control and intervention groups. The control groups received

the instrument without a blogging assignment given. The classes were conducted in the usual manner; readings were assigned prior to class attendance. The intervention groups were given a weekly blogging assignment related to the following topics: therapeutic communication; infection control; mobility; vital signs; pain management; and wound care (See Appendix A). These assignments were to be completed prior to class attendance and posted on a learning management system. After the 8 week period, the post-tests were administered to both groups.

The schedule for administration was:

Week one: administration of pre-test to all student groups (control and intervention).

Week two through six: Intervention groups participated in pre-class blogging assignments.

Week seven: All student groups received the post-test.

The timeline was adjusted to an eight week period due to class delays related to inclement weather conditions.

Limitations and Delimitations

This quasi-experimental study was conducted on a private college campus in the New York.

These factors were additional constraints on the study's findings:

1. A convenience sample of the sophomore class of 153 nursing students.
2. The course is conducted with a lab and clinical component which may have an overwhelming effect.
3. The classes were taught by different professors.
4. The tool was a self-report of engagement by the students.

5. There was only one school utilized.

This study is delimited to the population of nursing students who are enrolled in a fundamentals classes. The course consists of lecture, lab and clinical components.

CHAPTER IV

ANALYSIS OF DATA COLLECTION

Introduction

This chapter presents the results of the research study. Each question will be explored through the analysis of the data and demographics by descriptive and inferential statistics. The information obtained from the faculty questionnaire also will be presented. A summary of the analysis is offered in the conclusion.

Overview

A power analysis was conducted based on the paired sample t-test used for a pre-post intervention design. It was found that a minimum sample size of 54 subjects would give approximately 0.95 power at $\alpha = 0.05$ level of significance. This analysis was done using the G*Power Software Program (Faul, Erdfelder, Lang & Buchner, 2007). The number of participants enrolled in the fundamentals course was 153 students.

The purpose of the study was to examine the relationship between blogging assignments and engagement of nursing students in the classroom. After selecting the nursing fundamentals course for the study, professors were contacted and asked if they were interested in participating in the intervention of the study. These professor participants then attended an orientation session given by the researcher (See Appendix F). The orientation session included information about blogging, the way to post on the college's learning management system, and their involvement in the administration and supervision of the students' postings. They each signed a consent form (see Appendix H).

During the first week, 6 classes were surveyed using the Adapted Engaged Learning Index (AELI) (see Appendix C) and a short demographic instrument (see Appendix D). Each student signed a consent form (see Appendix I) prior to beginning the survey. During the next 8 weeks, allowing for weather delays and class rescheduling, the classes designated as control groups were taught the course as it was customarily delivered. The intervention classes received the blogging assignment and were instructed to complete the postings prior to the classes in which the material was given. After 8 weeks, the demographic instrument, consent form and AELI were administered to the control and intervention groups. At the conclusion of the study, a short, open-ended questionnaire (Appendix M) was given to the instructors who taught the intervention classes.

Demographics

The demographics for the nursing student population surveyed are described below. There were 137 female and 16 male participants in the study. Table 1 presents the number of males and females in each of the two groups surveyed.

In the control groups, there were 68 female and 10 male participants. In the intervention groups, there were 69 female and 6 male participants. This is reflective of the gender ratio present in the nursing student population.

Group	Male		Female	
	Frequency	%	Frequency	%
Control	10	7.8	68	92.2
Intervention	6	8.0	69	92.0

In Table 2, the demographics of age are described. Overall, there were 122 students who indicated 18 to 25 years of age; 25 students who indicated 26 to 35 years of age; five students who indicated 36 to 45 years of age and one student who indicated 46 to 60 years of age.

	Control		Intervention	
	Frequency	%	Frequency	%
18 – 25	63	80.8	59	78.7
26 – 35	14	17.9	11	14.7
36 – 45	1	1.3	4	5.3
45 – 60			1	1.3

In Table 3, the demographics of identified college classification is shown. Students were asked to identify their current classification in college based on years of attendance.

	Control		Intervention	
	Frequency	%	Frequency	%
Sophomore	35	44.9	35	46.7
Junior	30	38.5	23	30.7
Senior	13	16.7	17	22.7

When examining Table 3, the variation in collegiate status is explained by the number of transfer and second degree students who enrolled at the college. The junior and senior status relates to the amount of credits earned prior to entering the nursing program. All students were enrolled as sophomores in the nursing program.

In Table 4, the prior learning experience identified at the start of the study is presented. These data further explain the college classification table.

Table 4
Prior learning experience

	Control		Intervention	
	Frequency	%	Frequency	%
High School	31	39.7	25	33.3
Some college	14	17.9	15	20
Associate's	18	23.1	16	21.3
Baccalaureate	14	17.9	16	21.3
Master's	1	1.3	3	1.3

In Table 5, the students self-identified how many hours per week they spent studying for the course. Hours were grouped from none to 1 to 7, 8 to 15, 16 to 21, and more than 21. This was based on prior experience in the pre-test questionnaire.

Table 5
Hours Studying Per Week

	Control		Intervention	
	Frequency	%	Frequency	%
None	2	2.6	2	2.7
1 - 7	59	75.6	42	56
8 - 15	14	17.9	26	34.7
16 - 21	3	3.8	4	5.3
More than 21			1	1.3

Table 5 reveals that the majority of students in the control and intervention groups self-identified studying between one and seven hours a week. The intervention group showed 34.7% of the students studied between 8 and 15 hours a week. When combined, 73% of the students in the control group studied between one and 15 hours a week compared to 68% in the intervention groups. This demonstrates that they are similar in their approach to study habits.

In Table 6, the results of the students' experience with Web 2.0 technology during the six months prior to beginning the semester was queried. This question was asked to obtain a sense of their comfort level with different aspects of computer technology and usage.

	Control		Intervention	
	Frequency	%	Frequency	%
Facebook	69	88.5	57	76
Twitter	36	46.2	23	30.7
Blogging	10	12.8	4	5.3
Instagram	59	75.6	57	76
Blackboard	14	17.9	9	12

As revealed in Table 6, the majority of students reported experience with Facebook and Instagram applications. There were a distinctly lower number of students having familiarity with Blogging, Blackboard and Twitter which can be seen as microblogging.

In Table 7, the students' self-reported grade point average (GPA) prior to starting the semester is reported. It is noted that four students did not report their grades on the demographic form.

Table 7
Grade Point Average

	Control		Intervention	
	Frequency	%	Frequency	%
A (3.8 - 4.0)	17	22.4	8	11
A- (3.5 – 3.79)	16	21.1	27	37
B+ (3.2 – 3.49)	22	29	24	33
B (2.8 – 3.19)	20	26.3	12	16.4
B- (2.5 – 2.79)	1	1.3	1	1.4

Table 7 shows that a similar number of students identified themselves as having an A or A- grade point average in the control and intervention groups. The control groups had 43.5% in that category. The intervention groups had 48% with over a 3.5 GPA. There was also a similar distribution in the B+ and B ranges. Very few students identified a cumulative average below 2.8. It is relevant to note that the nursing program requires an overall 2.5 cumulative index prior to beginning the fundamentals of nursing course.

Research questions and hypotheses

This study is guided by four research questions. One hundred fifty-three students enrolled in a sophomore level course entitled nursing fundamentals took part in the study.

Research Question One

What knowledge of and prior experience with blogging do sophomore level nursing students report?

Research question one investigated the responses of the nursing students across groups based on the pre-tests. Descriptive statistics which uses statistical and graphic techniques were used to analyze question one. The students were asked their comfort level with technology on the demographic tool prior to the beginning of the study. The scale ranged from very comfortable to uncomfortable and unsure. Sixty-eight percent (n = 104) reported feeling very comfortable prior to the study, twenty-one percent (n = 32) were somewhat comfortable and eleven percent (n = 17) stated they were comfortable but still learning. Table 8 shows the results of this portion of the survey.

	Control		Intervention	
	Frequency	%	Frequency	%
Very comfortable	47	60.3	57	76
Somewhat comfortable	18	23.1	14	18.7
Comfortable but learning	13	16.7	4	5.3

As can be seen from Table 8, 94.7 % of the intervention groups were somewhat to very comfortable with technology. Therefore, the researcher concludes that technology was part of their daily lives and this was indicative of digital natives.

One of the questions about blogging experience revealed that eighty percent (n = 122) of the students had used a blog for a class assignment in the past. The questionnaire did not ask the nature of the blog posts or their intent. However, on the question of using blogging within the past six months, 9% (n = 14) said yes and 91% said no (n = 139). Table 9 shows the difference in the groups prior to the implementation of the intervention.

Table 9
Blogging experience

	Control		Intervention	
	Frequency	%	Frequency	%
Yes	10	12.8	21	28
No	68	87.2	54	72

Since the majority of students in either group reported little experience with blogging, the researcher concluded that the intervention would require orientation and support from the researcher.

Research Question Two

Do nursing students in control groups and intervention groups differ in their level of engagement based on the pre-test and post-test?

This research question sought to determine if there were differences in the groups based on the pre-test and post-test results. Upon initial analysis, there was a significant change of increased engagement in the groups when the statistics were pooled. The descriptive statistics showed a total pre-test score of 69.3 out of 90 and a post-test score of 72.7 out of 90. When the groups were separated into the control and intervention categories, however, there was no significant difference in engagement levels based on the Adapted Engaged Learning Index tool. While only semantic changes had been made, no further validity tests were done at the time of the study. A decision was made to obtain the statistics based upon the original version of the tool known as the Engaged Learning Index.

A factor analysis was performed on the original version of the tool known as the Engaged Learning Index (See Appendix L) that was developed by Schreiner and Louis (2006). This

instrument was developed to incorporate psychological factors with behavioral and affective indicators of engagement when learning (Schreiner & Louis, 2006). “The resulting construct of engaged learning is thus conceptualized as a positive energy invested in one’s own learning, evidenced by meaningful processing, attention to what is happening in the moment and involvement in learning activities (Schreiner & Louis, 2006, p. 4). Questions were separated into those that reflected the cognitive (COG), behavioral (BEH) and affective (AFF) arenas. Cognitive engagement has been defined as the quality of students’ psychological engagement in academic tasks, including their interest, ownership and approaches to learning (Anggraini, Setiyadi & Suderman, 2014). Behavioral engagement relates to involvement in learning and academic tasks and evidences through behaviors such as effort, persistence, asking questions, and contribution to class discussion (Skinner & Belmont, 1993). Affective engagement looks at the students’ reactions in the classroom such as interest, boredom, happiness, sadness and anxiety (Anggraini, Setiyadi & Suderman, 2014). A principal component analysis using a rotation method of Oblimin with Kaiser Normalization was conducted. The Cronbach’s alpha on the 10 items was 0.815. Each individual arena did not have a high Cronbach’s alpha report. The highest report was in the behavioral domain at 0.615. Next was the affective domain at 0.605. The cognitive domain registered a Cronbach’s alpha of 0.442.

A scree plot demonstrated four components that explained the variability in the data. Each of the items was shown to load onto one of the four components. The pattern matrix is shown in Table 10.

Table 10
Component Pattern Matrix

	1	2	3	4
<i>COG 1: Apply learning to something else in life.</i>	.055	.767	.122	-.233
<i>COG 2: Ask the professor questions</i>	-.003	-.050	.938	-.015
<i>COG 3: My mind wanders during class.</i>	.918	-.145	-.013	.014
<i>BEH 1: Discusses learning with friends.</i>	.058	-.100	.024	.890
<i>BEH 2: Participates in class discussions.</i>	-.005	.033	.884	.081
<i>BEH 3: Think about what I'm learning outside class</i>	.036	.297	.124	.647
<i>BEH 4: Hard to pay attention in class.</i>	.888	.107	-.074	.038
<i>AFF 1: Feel energized by the ideas I'm learning.</i>	.158	.761	.027	.102
<i>AFF 2: Learning things that are worthwhile to me as a person.</i>	-.094	.801	-.098	.195
<i>AFF 3: I've been bored in class a lot of time.</i>	.824	.101	.112	-.008

All of the items that reflected negative feelings or behaviors loaded on component one.

Component one speaks to a lack of engagement and commitment to the learning situation.

Component two contains application to other areas of their lives, feeling energized by the ideas they are learning and learning things that are personally worthwhile. Component three comprises asking the professor questions and participating in class discussions. Component four includes discussing what they are learning with friends and thinking about what they are learning outside of the classroom.

After the analysis, using an independent t-test, the total pre-score for the control group was 45.4 out of 60 with a standard deviation of 7.61. The pre-score for the intervention group was 47.2 out of 60 with a standard deviation of 6.48. The post-score for the control group was 43 out of 60 with a standard deviation of 6.71. The post-score for the intervention group was 43.4 out of 60 with a standard deviation of 8.45. Table 11 shows the means and standard deviations with the t-statistics and significance levels. The Levene test indicated that equal variances are assumed.

Table 11 *Statistical analysis of mean scores on ELI*

Group	Prescore	SD	Postscore	SD	t-value	Significance
Control	45.36	7.61	42.97	6.71	-1.607	.110
Intervention	47.23	6.48	43.35	8.45	-1.574	.118

Research Question Three

How do nursing students compare on the pre-tests and post-tests within each group, control and intervention, on their level of engagement?

The control group started the study at a mean score of 45.4 out of 60. The median value was 46. The minimum score was 17 and the maximum score was 60 with a range of 43. At the time of the post-test, the mean had declined to 43 out of 60 with a median of 43.5. The minimum score increased to 24 but the maximum lowered to 54 with a range of 30.

The intervention group started the study with a mean score of 47.2. The median value was 48. The minimum score was 17 and the maximum score was 59 with a range of 42. At the time of the post-test, the mean had declined to 43.4 with a median value of 45. The minimum score was 10 and the maximum of 54 with a range of 44. These are illustrated in Table 12.

Table 12 *Engagement comparisons*

Group	Pre-test mean	Pre-test median	Pre-test range	Post test mean	Post test median	Post test range
Control	45.36	46	17 to 60	42.97	43.5	24 to 54
Intervention	47.23	48	17 to 59	43.35	45	10 to 54

Research Question Four

What is the relationship of nursing students in control groups and intervention groups on level of engagement and gender and age based on post-test results?

A one way Anova test was conducted to identify the impact of age and gender on post-test scores. No significant impact was seen. The highest levels of engagement were seen in the 26 to 35 year old students (N = 23) with a mean of 46.1739, standard deviation of 4.21741. The minimum score was 36 out of 60 and the maximum was 54 out of 60. The 18 to 25 year old students (N = 112) had a mean score of 43.0982 with a standard deviation of 6.70479. The minimum score was 22 with a maximum of 54. The student who reported to be between 46 and 60 years of age, had a level of engagement of 51 out of 60 showing a high level of engagement. The Levene Statistic for the test had a significance level of .025 which shows assumption of homogeneity. This is shown in Table 13.

Table 13 Relationship of nursing students' engagement based upon age

Age	N	Engagement	Standard Deviation	Minimum	Maximum
18 to 25 years	112	43.0982	6.70479	22	54
26 to 35 years	23	46.1739	4.21741	36	54
46 to 60 years	1	51			

The one way Anova test for gender showed a significance level of .157. Females (N = 125) had a mean score of 44. Males (N = 16) had a mean score of 41.6. Welch and Brown-Forsythe tests for equality of means showed a significance of .25. This is shown in Table 14.

Gender	N	Engagement
Females	125	44.024
Males	16	41.625

The faculty questionnaire (see Appendix M) was administered after collecting the data from the students. The three professors were asked about their perception of student engagement in the classroom. All three professors stated that they used the blogs as teaching points and the students were more prepared to discuss the topics assigned. While not all the students sought the professors out after classroom discussion, one professor mentioned the case study on pain management stimulating more inquiry. The clinical experiences were brought up in class as an example of the topic presented. Only one professor reported students used the blogs to respond to one another's postings. They did say the answers became more detailed as the semester progressed. All of the professors planned on continuing the assignment in future courses as they saw value in the assignment. One of the professors stated, "I believe it facilitates connecting theory to practice and gets the students to begin prioritizing their nursing interventions." This statement is indicative of the professor's belief in the worth of the blogging exercise.

In summary, assessing the impact of blogging on student engagement in the classroom did not result in statistically significant results. Over the course of the study, the engagement level in the control and intervention groups, as demonstrated on the instrument, decreased although not statistically significant. There was no difference revealed when controlled for age and gender. In the following chapter, the implications and recommendations for use of these findings will be discussed.

CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Introduction

The purpose of this quasi-experimental study was to discover if blogging, prior to class attendance on the assigned topic, led to the increased engagement of the student in the classroom. By using Web 2.0 technology as an active learning strategy, it was hoped to encourage more involvement in the discussion and show evidence of clinical reasoning on the part of fundamental nursing students. This was encouraged by Benner and colleagues in the book, *Educating Nurses: A Call for Radical Transformation*, when they called for a shift in presentation from didactic and rote memorization to clinical reasoning skills that should give the students better capability of functioning in the health care system (2010).

The fundamentals of nursing course was chosen for the study because it was a course that was common to all nursing programs at approximately the same curriculum level. The study was conducted at one four year private college in the New York metropolitan area, using six sections of the nursing fundamentals course.

An instrument to measure engagement was chosen from the work of Popkess (2010) known as the Adapted Engaged Learning Index (See Appendix C). Her consent was sought and obtained (See Appendices J and K). It is a 15 item tool that uses a Likert type scale ranging from 1 (strongly disagree) to 6 (strongly agree). The questions address the affective, behavioral and cognitive aspects of engagement. A demographic instrument (see Appendix D & E) was also developed that consisted of age, gender, grade point average, study hours, prior learning

experience, and comfort level with computer technology, history with Web 2.0 technology applications and use of blogging for classroom assignments. The students were asked to sign a consent form (see Appendix I) prior to filling out the instruments. The classes were then assigned into either control or intervention groups.

The professors from the intervention groups were asked to participate in the study. Each of them signed a consent form (see Appendix H) and was oriented to the procedure of administering the blogging assignment (see Appendices F & G). The case studies (see Appendix A) used in the assignments, were designed to prepare the student for the class and evoke clinical reasoning when answering the questions on the posting. Over the next several weeks, students in the intervention group posted answers to the case studies. The control classes were taught without the use of blogging on the learning management software of the institution. The post-test was administered by the researcher to all of the classes during the eighth week of class.

The participating professors were asked to fill out a post-test survey (see Appendix M) inquiring about the experience with the blogging assignment. It was felt that their perspective would add depth to the findings and provide a different perspective. Their answers helped to add subjective viewpoints which helped to contrast with the findings of the engagement tool.

After administering the exams, the results were loaded into the SPSS program and analyzed using T-tests and analysis of variance (Anova). The data did not support that the blogging had a positive impact on the students' engagement in the classroom. In fact, the level of engagement, as measured by the tool, decreased from the pre-test to the post-test period although not significantly. The instrument was realigned to the original 10 questions on the Engaged Learning Index by Schreiner and Louis (2006). The change did not have a different outcome. All

of the null hypotheses were supported. There was no significant effect of the blogging intervention on student engagement in the classroom in this study.

Interpretation of the findings

Research Question One

What knowledge of and prior experience with blogging do sophomore level students report?

The results from research question one revealed that the groups were similar and not statistically different from each other based on their level of comfort with technology. The majority of each group reported being very comfortable with technology. This corresponds with the literature about the digital natives who have grown up in a society that relies on technology for many aspects of their lives. According to Browning, Gerlich and Westermann, this comfort with social media provides a chance for professors to speak to students in a way they are likely to be reached (2011).

When asked about experience with blogging, 80% of the students had used a blog for a class assignment in the past. However, most of the students (91%) reported that they had not used the technique in the past 6 months. Blogging is well suited for fostering learning because it has interactive, reflective and collective qualities (Baird & Fisher, 2005). The fact that although students said they have blogged in the past but not within the last semester may speak to the reticence on the part of faculty to use alternative assignments on the web for classes. Du and Wagner (2007) write that many students rely on instructors to use relevant learning materials. Other disciplines have embraced other modalities of education, including the use of technology.

The comfort level that the students reported accompanied by the decreased exposure to blogging in the collegiate environment may explain the reduced impact of blogging on their engagement.

Having discussions online through blogging and discussion boards have been shown in other disciplines to start more informed class discussions, facilitate feedback and exchange of ideas (Davi, Frydenberg, & Gulati, 2007). Several studies showed that to increase student engagement, it was important to create class discussions following pre-class assignments (Al-Fadda & Al-Yahya, 2010, Williams & Chin, 2009). More studies should be conducted to ascertain ways to engage nursing students in the process.

Nursing education must be studied to identify strategies that promote engagement. If professors are to reach this generation, they must find ways to address learning styles that are technology-based. For far too long, collegiate education has been based on pedagogy, placing the emphasis on teacher-centered approaches rather than making the students responsible for their learning. Shellenbarger and Robb (2015) point out that professors should look for ways for developing self-directed professionals who have the ability to analyze information and translate it into effective care in a complex and changing health care environment. This skill is essential for the registered nurse. Shulman (2002) stated that students who are involved in educationally productive activities in college are developing habits of the mind and heart that enlarge their capacity for continuous learning and personal development.

Patricia Benner and associates (2010) called for nurses to improve their clinical reasoning abilities. The case studies in this study were designed to start the fundamental students on that path. Promoting this development should be the basis of nursing education. Koharchik, Caputi, Robb and Culleiton (2015) state that a nurse who is proficient at clinical reasoning should be

able to make timely and effective decisions. Through creative and innovative educational strategies, students will start to make the connections necessary to develop this mindset. Researching which approach will be the most appropriate is imperative to transform nursing education and, hence, future professionals.

Research Question Two

Do nursing students in control groups and intervention groups differ in their level of engagement based on the pre-test and post-test?

As noted in chapter four, there was no significant change in level of engagement based on the pre-test and post-test. In fact, the level of engagement according to the instrument decreased from the beginning of the study to the end. While this was surprising and disappointing, there are many explanations for this finding.

The first to be explored is the instrument itself. The original Engaged Learning Index reported a Cronbach's Alpha of $\alpha = .85$. When it was used on the students in this study, the level was $\alpha = .815$. But when each of the items was parsed out for individual Cronbach's Alphas then the number decreased. The cognitive scale rated $\alpha = .442$; the behavioral scale was $\alpha = .615$; and the affective scale computed to $\alpha = .605$. This may be due to the fact that it was only tested on two different studies prior to this research and is still considered a *pilot tool* for reliability. Another factor may be that this study was the first study to use this tool in an intervention study.

Carini, Kuh, and Klein (2006) reported that student self-reports are valid and reliable under certain circumstances:

- (1) the information requested is known to the respondents,
- (2) the questions are phrased clearly and unambiguously,
- (3) the questions refer to recent activities,
- (4) the respondents think the questions merit a thoughtful response,
- (5) the information requested is potentially verifiable, and
- (6) the question asks for information that is known to those answering the questions and does not threaten, embarrass or violate their privacy or encourage the respondent to respond in socially desirable ways (p. 2)

Perhaps the students felt that the answers they provided in the pre-test, given before the course started, had not changed significantly by the halfway point. The pre-test was administered prior to the beginning of the course and therefore recent activities were not attributable to the course itself.

Additionally, the course was complex in its administration. The students attended a lecture/discussion format class for 3 hours, then went to a laboratory class for 2 hours. The course also included a clinical experience on a separate day for 7 hours. They also take at least two other nursing courses during the semester that are corequisites as well as general education courses. This may have led to an overwhelming semester which could have caused the students to decrease their engagement by the eight week point.

Schreiner and Louis (2006) put the instrument forth “as a pre-test and post-test measure of effectiveness of interventions they design for the improvement of learning-centered teaching” (p. 20). Yet, when it was utilized for this quasi-experimental intervention study, it failed to show an engagement increase. It well may be that the Engaged Learning Index is not appropriate for interventional studies.

Research Question Three

How do nursing students compare on the pre-tests and post-tests within each group, control and intervention, on their level of engagement?

When the statistics were analyzed, the control and intervention groups did not change significantly from pre to post-test. The reasons could include the reliability and validity of the instrument in an intervention study and/or the course components' impact on the students and/or the choice of the course for the study. The initial excitement of the students about taking the course reduces as the semester passes and the reality of life situations impacts their attitudes.

Instrument reliability and validity are affected by several threats. The internal threat of history could have occurred because each of the control and intervention groups was taught by different professors. Their individual style of teaching and approach to using the blogging assignment could have affected the students' level of engagement as demonstrated on the tool. In addition, the fundamentals course has three distinct components that all impact upon the students' involvement at any given time in the semester. The students attend a three-hour lecture each week followed by a lab component for two hours. In addition, they have a clinical component of the course that consists of 7 hours on a hospital unit. In addition the nursing students have to practice in the laboratory at least 9 documented hours and are tested on 6 different skills in the lab. The students universally complain about the course's intensity and time consuming nature. The course evaluations indicate that the students have criticisms about the intensity of the course and the amount of assignments that are given.

As the semester continues, the students are required to increase their study time and build on their knowledge base. This could lead to decreased engagement. This represents a second threat to validity known as maturation. Maturation is defined as changes in the research subjects themselves over time (Melnik & Morrison-Beedy, 2012). As the students changed in the perception of the coursework, their involvement with the material transformed as well. The finding of lowered mean score on engagement within each group may be attributable to maturation.

The testing process of using the same instrument over a relatively short period of time could have resulted in a testing threat to validity. Melnyk and Morrison-Beedy (2012) state that testing poses a particular issue when it is repeated over time. “Baseline assessment followed by intervention followed by follow-up testing raises the question of whether changes in outcome were caused by the intervention or by the testing itself” (p. 95). The students may have responded to the survey with what they felt would be what the researcher wanted to see rather than what was realistic for the situation. Perhaps the fact that change of engagement was in a negative direction could be attributable to just filling out the survey so they could “get it over with” and get on with the class itself or they were feeling negatively about the course.

Research Question Four

What is the relationship of nursing students in a control groups and intervention groups on level of engagement and gender and age based on post-test results?

The highest level of engagement was seen in the 26 to 35 year old students. There was one student over 46 years of age that had a level of engagement of 51 out of 60. This group

reflects the students who returned to school to pursue a nursing degree after either attaining a degree in another subject or attending college for a period of time prior to starting the program. While there was no statistical significance, it may show a higher commitment to the academic experience, maturity and more experience as a student.

As for gender impact, females scored higher than males for engagement but not statistically significant level. Nursing programs historically have had a higher percentage of females in attendance. This finding did not show that gender has an impact on engagement. Anderson (2014) studied the interactions between nursing faculty and male undergraduate students in a nursing program. With regard to male students, there were perceived barriers for males in the clinical and laboratory setting. This discomfort may lead to decreased engagement in the classroom and clinical situations, but was not reflected in the findings of this study.

Limitations

This study was the first time the ELI/AELI was used in an intervention study. All of the other studies used the instrument for a one-time examination of engagement level in college students. It was Schreiner's and Louis's statement "faculty developers could also use the ELI as a pre-test and post-test measure of the effectiveness of interventions they design for the improvement of learning-centered teaching (2006, p. 20)." The Cronbach's Alpha score for ELI, in studies prior to this one, was .85. This research study showed a level of .815 but when separated out into domains the reports showed a range of 0.615 to 0.442. The reliability suffered when used in an intervention format. It may well be that this instrument is not designed to evaluate engagement levels following an intervention such as in this study.

The fundamentals course was chosen because it was commonly offered in nursing programs with similar course outlines and objectives. After two universities declined to participate due to faculty reservations, the study was conducted at one college in the New York metropolitan area. This decreased the generalizability of the findings. In addition, the course itself has many different components and, therefore, isolating the impact of a blogging assignment as increasing engagement became difficult. The faculty, however, did notice an increase in participation and understanding of the material covered in the blogs.

Another limitation is that there was no consistency in regard to lecture professors. Each of the six professors had different styles of instruction which was out of the control of the researcher. One of the control classes was taught by a flipped classroom approach. The lecture component was provided in a video format prior to class and the classroom time was spent exploring the application of the concepts. Those students evaluated the experience as being more engaging and responsive to their learning needs. Others used a case study assignment to prepare for the class in a written format that did not use technology. Engagement can be affected by the faculty style and student perceptions of their involvement. Schwitzer and Lovell (1999) point out that those students, who perceive high levels of student interaction, have greater general satisfaction and a higher quality of learning. The atmosphere in the classes, both control and intervention can have an impact on student engagement.

Recommendations for further research

1. Replication of this study would add to the body of knowledge regarding the use of blogging in nursing education. This study should be replicated as an intervention pre-

post-test format using a lecture only course for a full semester. The course that was used in this study consisted of a lecture, lab and clinical components. Taking away the multiple components of labs and clinical combined with lecture would leave just the classroom experience for examination. In a replication study, the researcher could try the ELI or AELI as a tool to see if the change in format was the issue or the researcher could develop a tool that looks specifically at the impact of technology on the classroom. This study was enhanced by the input of the professors and would have been better served if the students had an opportunity to answer similar questions in a mixed method format. Open-ended questions should be added so that the students could further explore their feelings and attitudes regarding blogging and learning. Moreover, clinical faculty should be interviewed to see if the students are more aware of clinical reasoning skills and their application.

2. A tutorial on blogging should be provided to the students prior to beginning the study to assure that they all have the same information about the intervention.
3. The sections should be taught by the same professor to maintain consistency and be able to more accurately measure the engagement level of the students. This would take away the variability that is inherent when several different instructors are participating. The factor of blogging prior to class would be the only difference between the sections.
4. The study should be conducted with multiple collegiate sites to increase the number of participants. This would increase the generalizability of the findings.
5. It is important for future research to be directed towards exploration of different strategies based upon student-centered formats.

6. A new instrument that could be created to test interventions and student engagement in the classroom.

Conclusion

In summary, nursing education is an important area to study as there are over 3 million nurses in the country and they are the most numerous of the health care workforce. The health care system is rapidly changing in its focus with the level of acuity increasing in the hospital environment and the shift moving towards a community-based approach to health care delivery. Therefore, the challenge to nursing education is to adapt to these fluctuating situations and use a broader approach in its delivery. The new generation of nursing students are more comfortable with technology in and outside of the classroom.

This quasi-experimental intervention research study examined the impact that technology-enhanced learning activities such as blogging may have on engagement in the classroom. While statistically the findings were not at a significant level, the curricular design of using an active learning strategy remains a viable option. The net generation prefers a creative environment that incorporates technology and group interaction. Understanding the use of metacognition and the way the students learn supports the use of technology based interventions and creative teaching/learning strategies.

The National Council of State Boards of Nursing (2007) supports the use of interactive learning strategies and recognizes the integration of experiential learning, the expanded use of learning technology, outcome-based education and evidence-based education strategies. Students

present a unique challenge to nursing education that expects faculty to employ new teaching strategies to acquire and maintain their attention both inside and outside of the classroom

The future of health care calls for nurses who can clinically reason through a case scenario and provide quality care to their patients. Lecturing in a classroom and expecting the students to absorb the information and use it in the clinical setting is no longer responsive to the student population. Engaging the students in the learning experience is imperative to ensure that they will think like a nurse.

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Appendix A
FUNDAMENTALS COURSE OUTLINE with Blogging Assignments

1. COMMUNICATION
 - a. Process
 - b. Factors Affecting
 - c. Special Consideration

Blogging Assignment

THERAPEUTIC COMMUNICATION

Case Study scenario: Mr. Martin, age 86, has just been admitted to the unit with a diagnosis of pneumonia. You walk into the room and find him in bed, on his side facing away from the door. The room is dark and the TV is off. There are no visitors. You introduce yourself and ask how he is feeling. He grunts, “I’m fine” and pulls his pillow closer.

- i. What action should you take when there is a difference between verbal and non-verbal behavior?**
- ii. Based on your analysis of this interaction, identify the blocks to communication that may be occurring.**
- iii. What distance should you assume when speaking to Mr. Martin?**
- iv. Construct some options for how you might proceed to improve communication and provide care.**

2. INFECTION CONTROL
 - a. Health Care Associated Infections
 - b. Bacterial Resistance
 - c. Medical Aseptic Practices

Blogging Assignment

INFECTION CONTROL

Case study scenario: You have been assigned to work on a medical-surgical unit in a local hospital. The patients on the unit have a variety of diagnoses ranging from infectious diseases to orthopedic injuries.

- i. What roles might you play in the chain of infection?**
- ii. Why are emerging infections of special concern in healthcare?**
- iii. Consider your current lifestyle. How would you evaluate your ability to support your body’s defenses?**
- iv. Identify at least three ways patients can avoid acquiring an infection while on the unit.**

3. PHYSICAL MOBILITY

- a. Ergonomics
- b. Positioning
- c. Complications of immobility

MOBILITY

Case study scenario: You are visiting the home of a woman who has just had right hip replacement surgery. Her daughter, who has been caring for her full-time, relates that she is reluctant to move and use her walker. Transferring to a chair is difficult and painful. Her daughter is afraid to help her when she calls out in pain. Encouraging independence results in the woman becoming fretful and angry.

- i. Prioritize your assessment taking the scenario into consideration.**
- ii. Identify causes that may be contributing to her reluctance to move.**
- iii. What are at least three possible problems that may arise in priority order?**
- iv. Which members of the health care team should be included in the plan of care?**

4. Vital Signs

- a. Temperature
- b. Pulse
- c. B/P

VITAL SIGNS

Case study scenario: Mr. C. has fallen at home and suffered a laceration of his hand. During his emergency department visit, his blood pressure reading is 162/98. You notice that he is morbidly obese and has a history of smoking cigarettes. He states that he rarely exercises and works at a desk job in an accounting firm.

- i. Identify possible reasons that his blood pressure is elevated. Could there be other factors that affected the reading?**
- ii. What teaching points could you emphasize before his discharge?**
- iii. Why is it important to intervene with Mr. C. about his blood pressure?**

5. Pain Management
 - a. Pain perception
 - b. Factors affecting pain response and perception
 - c. Management guidelines

PAIN MANAGEMENT

- 1. What has been your experience using non-pharmacological pain relief measures to manage your own pain? How would you incorporate these methods into your nursing practice?**
- 2. Which groups of patients are most at risk for inadequate pain management?**
 - i. What can you do to assist each group?**
 - ii. How do past pain experiences affect present pain experience?**

6. Wound Care
 - a. Integumentary function
 - b. Factors affecting integumentary function
 - c. Types of wounds
 - d. Care principles

WOUND CARE

Case study scenario: John, age 8, had been playing soccer with his friends when he fell and injured his scalp and elbow. You had been watching the game from the sidelines and run to help.

- i. What is the first action you should take?**
- ii. After being taken to the emergency room, the nurse practitioner decides that the head injury requires sutures. What should be done to prepare him?**
- iii. When he returns a week later for suture removal, you notice that the elbow injury is erythematous, warm and tender to touch, and draining purulent fluid. What questions should you ask?**
- iv. Explain how you would collaborate with other health team members to promote effective wound healing.**

7. Physical Safety
 - a. Falls – risk assessment and prevention
 - b. Restraints
 - c. Environmental control.

PHYSICAL SAFETY

Case Study scenario: Mr. M., age 81, has just been transferred to the medical-surgical unit from an assisted living facility. In report, you were told that he was alert and oriented, diagnosis: pneumonia and dehydration. When you enter his room, he is confused and disoriented, talking about going to work and taking the subway. He is becoming combative and trying to get out of bed.

- i. What is your first response to this situation?**
- ii. What information do you need to adequately assess for safety risks?**
- iii. Describe the plan of care for Mr. M. that would decrease his fall risk.**

Appendix B



1000 Hempstead Avenue
 Rockville Centre, NY 11571
www.molloy.edu

Tel. 516.323.3653
 Tel. 516.323.3801

Date: January 7, 2015
 To: Alicia Stone
 From: Kathleen Maurer Smith, PhD
 Co-Chair, Molloy College Institutional Review Board
 Veronica D. Feeg, PhD, RN, FAAN
 Co-Chair, Molloy College Institutional Review Board

SUBJECT: MOLLOY IRB REVIEW AND DETERMINATION OF EXPEDITED STATUS
Study Title: The impact of blogging on nursing student engagement in the classroom
Approved: January 7, 2015

Dear Professor Stone:

The Institutional Review Board (IRB) of Molloy College has reviewed the above-mentioned research proposal and determined that this proposal is approved by the committee for the Molloy subjects and pending approval for the other sites. It is considered an EXPEDITED review per the requirements of Department of Health and Human Services (DHHS) regulations for the protection of human subjects as defined in 45CFR46.101(b) and has met the conditions for conducting the research. However, please note that reviewers expressed some concern that the consent you submitted is only for the faculty partners, and the student "consent" should be specified in a separate document that may be part of the demographics questionnaire that you have included with the application. This document can be an "invitation to participate" that spells out what would be in a consent, (i.e. voluntary, and contact information) and that their participation by completing the questionnaires will represent their consent rather than a signature page.

You may proceed with your research at Molloy College and continue at the other sites when they approve. Please submit a report to the committee at the conclusion of your project.

Changes to the Research: It is the responsibility of the Principal Investigator to inform the Molloy College IRB of any changes to this research. A change in the research may change the project from EXPEDITED status that would require communication with the IRB.

Sincerely,

Kathleen Maurer Smith, PhD

Veronica D. Feeg, PhD, RN, FAAN

Appendix C

Adapted Engaged Learning Index

This questionnaire is a series of statements about activities and beliefs you may have about college education. You may agree with some of the statements and disagree with others. There are no right or wrong answers. Please indicate your feelings about each of these statements related to this course as of right now. Please be truthful and describe your beliefs or behaviors as they are, not as you want them to be. Your replies will be kept confidential and will be compiled as a group. No individual identifiers will be made public. Completion of the questionnaire will be deemed as consent to participate in the study.

Indicate how strongly you agree or disagree with each of the following statements. On a scale of 1 to 6 (1 = strongly disagree; 2 = moderately disagree; 3 = mildly disagree; 4 = mildly agree; 5 = moderately agree; and 6 = strongly agree)

Select only one response per question.

<i>Question</i>	1	2	3	4	5	6
<i>1. I usually can find ways of applying what I'm learning to something else in my life.</i>						
<i>2. I feel energized by the ideas that I am learning.</i>						
<i>3. I feel as though I am learning things that are worthwhile to me as a person.</i>						
<i>4. I am learning a lot this semester.</i>						
<i>5. I find myself thinking about what I'm learning even when I'm not in class.</i>						
<i>6. I often discuss with my friends what I'm learning in class</i>						
<i>7. I usually think about how the topics in class might be connected to things I have learned in previous courses.</i>						
<i>8. When I am learning about a new idea, I think about how I might apply it in practical ways.</i>						

Appendix D

Demographic Instrument

Instructions: This questionnaire is designed to gather information about you as a student in this class. Your replies are confidential and will be compiled as a group. No individual student identifiers will be made public. Completion of the questionnaire will be deemed consent to participate in the study.

Please provide your answer in the blank.

Name: _____

1. What is your age range? 18-22 ___ 23-30 ___ 31- 40 ___ 40+ ___
2. At the end of last term, what was your grade point average at this institution?

3. What is your gender? Female ___ Male ___
4. What is your current classification in college based on years of attendance?
 - a. Sophomore _____
 - b. Junior _____
 - c. Senior _____
5. On average, how many hours per week do you spend studying for this course?
 - a. 0 _____
 - b. 1 – 7 _____
 - c. 8 – 15 _____
 - d. 16 – 21 _____
 - e. More than 21 _____
6. Other than your current college experience, please indicate your prior learning experience to date:
 - a. High school graduate _____
 - b. Attended college but did not complete degree _____
 - c. Completed an Associate's Degree in field other than nursing _____
 - d. Completed a Bachelor's degree _____
 - e. Completed a Master's degree _____
 - f. Completed a Doctoral degree _____
7. What is your perceived level of comfort using computer technology?
 - a. Very comfortable _____
 - b. Somewhat comfortable _____
 - c. Comfortable but still learning _____
 - d. Uncomfortable and unsure _____
8. Indicate which Web 2.0 application you have used within the past 6 months.

- a. Facebook _____
 - b. Instagram _____
 - c. Blackboard _____
 - c. Blogging _____
 - d. Twitter _____
9. Have you ever used blogging for a classroom assignment? Yes ____ No ____

Appendix E

Demographic Instrument Post-test (for Intervention groups)

Instructions: This questionnaire is designed to gather information about you as a student in this class. Your replies are confidential and will be compiled as a group. No individual student identifiers will be made public. Completion of the questionnaire will be deemed consent to participate in the study.

Please provide your answer in the blank.

Name: _____

10. What is your age range? 18-22 ___ 23-30 ___ 31- 40 ___ 40 + ___
11. At the end of last term, what was your grade point average at this institution? _____
12. What is your gender? Female ___ Male ___
13. What is your current classification in college based on years of attendance?
 - a. Sophomore _____
 - b. Junior _____
 - c. Senior _____
14. On average, how many hours per week do you spend studying for this course?
 - d. 0 _____
 - e. 1 – 7 _____
 - f. 8 – 15 _____
 - g. 16 – 21 _____
 - h. More than 21 _____
15. Other than your current college experience, please indicate your prior learning experience to date:
 - i. High school graduate _____
 - j. Attended college but did not complete degree _____
 - k. Completed an Associate’s Degree in field other than nursing _____
 - l. Completed a Bachelor’s degree _____
 - m. Completed a Master’s degree _____
 - n. Completed a Doctoral degree _____
16. What is your perceived level of comfort using computer technology?
 - o. Very comfortable _____
 - p. Somewhat comfortable _____
 - q. Comfortable but still learning _____
 - r. Uncomfortable and unsure _____
17. Indicate which Web 2.0 application you have used within the past 6 months.

- s. Facebook _____
- t. Instagram _____
- u. Blackboard _____
- c. Blogging _____
- d. Twitter _____
18. How many times have you posted a blog during this study? _____

Appendix F

Faculty Orientation to Blogging

Alicia A. Stone

1. Welcome to the Blogosphere!
 - a. What is blogging?
 - b. How will it work?
 - i. Case study approach
 - ii. Clinical reasoning questions
 - iii. Answering on the blackboard/forum
2. Assignments
 - a. Topics
 - i. Vital signs
 - ii. Therapeutic communication
 - iii. Mobility
 - iv. Infection control/asepsis
 - v. Wound Care
 - vi. Pain management
 - vii. Safety
 - b. Response assessment/ grading
 - c. Deadlines
 - d. Student orientation
3. Study parameters
 - a. Student engagement
 - b. Instrument
 - c. Researcher involvement
4. Thank you for your cooperation and consideration of this interventional study.

Appendix G

BLOGGING ORIENTATION CHECKLIST

This checklist covers the areas that will lead to a successful blogging assignment. Please indicate by initials and the date when you feel comfortable in its administration.

Thank you, Alicia Stone

TASK	INITIAL/ DATE
<i>I am able to log onto the forum/blackboard system.</i>	
<i>I can post the assignment for the students.</i>	
<i>I can check the status of the assignment and students' responses.</i>	
<i>I am able to print out the response report.</i>	
<i>I can orient the students to the blogging assignment.</i>	

Appendix H
Consent Form for Participation in an Interventional Research Study
Molloy College
Impact of Blogging Assignment on Student Engagement in the Classroom
Alicia A. Stone MS, RN, FNP
Doctoral Candidate

You are invited to participate in a research study conducted by Alicia A. Stone. The purpose of this research is to investigate the impact of blogs on the engagement of students in the classroom. Your participation will involve assigning the blogs on a weekly basis and monitoring the students' compliance with the postings.

There are no known risks associated with this research. The researcher will be administering the engagement measurement instrument known as the Engaged Learning Index and a demographic tool prior to the start of the blogs and then after an eight week period. This research may help us to understand how blogging influences the students' involvement in the course.

An orientation seminar will be conducted by the researcher about the use of blogs and the blackboard/forum system utilized in the university. Your attendance at this seminar is required in order to participate in the study.

There will be no identification of the university, your name or the students' names in the publication resulting from this study.

Your participation in this research study is voluntary. You may choose not to participate and you may withdraw your consent to participate at any time. You will not be penalized in any way should you decide not to participate or to withdraw from this study.

If you have any questions or concerns about this study or if any problems arise, please contact Alicia A. Stone at Molloy College at 516-323-3716. If you have any questions or concerns about your rights as a research participant, please contact the Institutional Review Board at your university.

Consent

I have read this consent form and have been given the opportunity to ask questions. I give my consent to participate in this study.

Participant's signature _____ Date _____

A copy of this consent form will be given to you

Appendix I

Dear Student,

I am a Doctoral candidate who is conducting research on student engagement at your institution. I am asking you to take part in this study. The research study is examining student engagement. You are being asked to participate as a member of this Fundamentals in nursing class. The study is being conducted as a part of a doctoral dissertation for a PhD in nursing from Molloy College.

Your participation consists of filling out a survey at the beginning of the semester, participating in preparation assignments for class and filling out a second survey at mid-semester. There is no obligation to participate. Your professors will not see your responses to the surveys and your identity will be kept confidential in the reports. You can withdraw from the study at any time without any repercussions.

There are no foreseeable risks to your participation in this study. The benefits may be an increased understanding of the course material and participation in the classroom.

Providing informed consent to participate in this research study is up to you. If you do choose to be in the study, then you should sign the form. If you do not want to take part in this study, you should not sign this form. Refusing to participate will not have an effect on your grade or university standing. You will receive a copy of this consent form.

It is expected that about 200 individuals will take part in this study at four different collegiate settings. The study has been approved by the Farmingdale State College Institutional Review Board. If you have any questions about your rights as a research subject, please contact Dawn Grzan, IRB Administrator, Office of the Institutional Review Board at 631-420-2687 or grzand@farmingdale.edu. If you wish to contact the researcher, you can reach me at Molloy College, 1000 Hempstead Avenue, Rockville Centre, NY 11571 or by phone: 516-323-3716.

Thank you for your consideration of participating in this study.

Alicia A. Stone MS, RN, FNP

Doctoral Candidate, Molloy College

I agree to participate in the study.

Student Name

Student signature

Date

Appendix J

Molloy College
1000 Hempstead Avenue
Rockville Centre, NY 11571
November 22, 2014

Dr. Ann M. Popkess
Assistant Professor
Southern Illinois University, Edwardsville
Edwardsville, IL 62026

Dear Dr. Popkess,

I am writing this letter to request the use of the Adapted Engaged Learning Index for my dissertation research. My study is an interventional design which is looking for a relationship between blogging on a discussion board and student engagement in the fundamentals nursing classroom. The instrument will be administered as a pre-test and post-test to several classes in four different university settings in the New York area. Half of the classes will be designated for control groups. Your tool is perfect for examining the relationship of an out of class assignment and engagement.

I am hoping to implement the study this spring. I am attaching the instrument and demographic form I want to use. Please note the removal of the words “in this course” to allow usage before the course’s start. The demographic instrument is my own creation that will be juried prior to its use.

Thank you for your consideration of this matter. I look forward to hearing from you soon.

Sincerely,

Alicia A. Stone MS, RN, FNP

Doctoral Candidate, Molloy College

Appendix K

Ann [apopkes@siue.edu]

Actions

To:

Alicia Stone

Inbox

Saturday, November 29, 2014 11:53 AM

Ms Stone:

Thank you for your interest in using the AELI tool. To my knowledge or has not yet been tested in the way you are proposing. However, you have my permission to use and adapt the tool for your study.

Regards

Ann M Popkess RN PhD

Appendix L

Engaged Learning Index (original)

<i>Question</i>	1	2	3	4	5	6
1. <i>I often discuss with my friends what I'm learning in class.</i>						
2. <i>I regularly participate in class discussions in most of my classes.</i>						
3. <i>I feel as though I am learning things in my classes that are worthwhile to me as a person.</i>						
4. <i>It's hard to pay attention in many of my classes.</i>						
5. <i>I can usually find ways of applying what I'm learning in class to something else in my life.</i>						
6. <i>I ask my professors questions during class if I do not understand.</i>						
7. <i>In the last week, I've been bored in class a lot of the time.</i>						
8. <i>I find myself thinking about what I'm learning in class even when I'm not in class.</i>						
9. <i>I feel energized by ideas that I am learning in most of my classes.</i>						
10. <i>Often I find my mind wandering during class.</i>						

Appendix M

FACULTY QUESTIONNAIRE

1. During the intervention, did you find that students were more active in class discussions?
2. Did the students seek you out after class to further the classroom discussion?
3. Did the students bring up clinical experiences to help them apply the concepts outside of the classroom?
4. Were the students' answers to the case study questions perfunctory or detailed? Did they respond to each other's submissions?
5. Do you plan on continuing the assignment in future courses? If not, please explain.

