

NURSING STUDENTS' ACHIEVEMENT USING SCAFFOLDING  
CASE STUDIES IN THE BLENDED LEARNING  
ENVIRONMENT

by

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## ABSTRACT

The current nursing shortage has significantly impacted the nation's health-care system and nursing education. Retention, matriculation, and licensure of nursing students are critical to ameliorate the growing nursing shortage. With the growing concern of the nursing shortage and decreasing student retention, nursing educators need to implement and evaluate various learning strategies and learning environments. Benner, Sutphen, Leonard, and Day (2010, p. 14) charged that "[c]lassroom teachers must step out from behind the screen full of slides and engage students in clinic-like learning experiences that ask them to learn to use knowledge and practice thinking in changing situations, always for good of the patient." One way to achieve this goal is for teachers to incorporate active learning in their classrooms. Active learning encourages the students to construct their own knowledge (Anthony, 1996) and to take responsibility for their own learning (Fahlberg, Rice, Muehrer, & Brey, 2014). The purpose of this quasi-experimental study was to explore the effectiveness of scaffolding case studies in the blended learning environment versus traditional pedagogy on nursing student academic achievement. Forty-three nursing students enrolled in a fundamentals nursing course (first clinical course) received case studies for three of their six modules over the semester. Also, 54 students from the previous semester did not receive any case studies and served as the control group. When comparing all the grades for all six module tests among the experimental group, no significant difference was found. However, when comparing the experimental group with the control group, the experimental group significantly improved in the first test that implemented the case study.

Although not all test scores were significantly different, the experimental group consistently scored higher than the control group on all the case study modules. These results could indicate improved academic achievement, but more research is needed in this area before determining that this learning strategy should or should not be used for nursing education.

DEDICATION

To Mark

Husband, Partner, Confidante

I could not have made it without you.

Thank you for your unwavering support and ineffable love.

I love you.

## LIST OF ABBREVIATIONS AND SYMBOLS

AACN	American Association of Colleges of Nursing
ADDIE	Analyze, Design, Develop, Implement, and Evaluate
ADN	Associate Degree of Nursing
ANOVA	Analysis of Variance
ATI	Assessment Technologies Institute
BSN	Bachelor of Science Degree of Nursing
HESI	Health Education Systems Incorporated
IETL	Institute for Excellence in Teaching and Learning
IOM	Institute of Medicine
LPN	Licensed Practical Nurse
MANOVA	Multivariate Analysis of Variance
NCLEX	National Council Licensure Examination
NLN	National League of Nursing
NUR 102	Fundamentals of Nursing course number
NUR 104	Introduction to Pharmacology course number
NUR 201	Nursing Throughout the Lifespan I course number
SCC	Southeastern Community College
US	United States

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## CHAPTER I

### INTRODUCTION

The current nursing shortage has significantly impacted the nation's health-care system and nursing education. According to the Bureau of Labor (2012), registered nurses will have the highest job growth through 2020 due to the nation's aging population. Older adults (those over 65 years old) comprise the fastest growing population in the nation and will require the most nursing care (Wallace, Greiner, Grossman, Lange, & Lippman, 2006). In addition to job growth, the average age of a registered nurse was over 50 in 2012 (Donelan, Buerhaus, DesRoches, Dittus & Dutwin, 2008). According to McMenamini (2014), the numbers of retiring registered nurses cannot be adequately replaced with the numbers of the younger classes of nurses. Fewer students enrolled and matriculated from nursing schools after the 1980s, which was due in part to decreased funding for students pursuing nursing education and also due to an increase in opportunities for women to choose other careers (McMenamin, 2014). With these factors, the current nursing population will need replacing at an estimate of 1.2 million by 2020 (Bureau of Labor, 2012).

Not only is the nursing shortage affecting nurses in practice but also nurses in education. The increasing educational demands for nursing educators have deterred some potential candidates for nursing faculty, and the aging nursing faculty population has increased the need for faculty recruitment (American Association of Colleges of Nursing [AACN], 2012). Requirements for more advanced degrees for nursing educators with no additional compensation have reduced the number of nurses willing to become educators (Ganley & Sheets, 2009;

McMenamin, 2014; Nardi & Gyurko, 2013). Average salaries in the United States for advanced nurse practitioners with a master's degree are \$95,070 annually, and certified nurse anesthetists with a master's degree are \$157,690 annually; whereas the average nursing educator with a doctoral degree earns \$70,200 annually (Bureau of Labor, 2013). This vast discrepancy decreases the attraction of qualified applicants to this field, especially the younger nurses (Nardi & Gyurko, 2013). AACN (2014) reported that 28.4% of nursing schools have difficulty recruiting faculty due to noncompetitive salaries with those of positions in the clinical practice.

In addition to decreased compensation, the requirement of at least a master's degree for associate degree nursing (ADN) programs and a doctoral degree for baccalaureate degree nursing (BSN) programs has stymied the recruitment of nursing faculty (Ganley & Sheets, 2009; McMenamin, 2014; Nardi & Gyurko, 2013). Sixty percent of new registered nurses have an associate degree and only 21% of them continue their education (Stokowski, 2011). With no incentives (other than personal desire) to motivate ADN nurses to continue their education, the faculty pool of qualified candidates dwindles (Nardi & Gyurko, 2013). Thirty-one percent of nursing schools struggle to find faculty due to the low number of available educators who have a doctorate (AACN, 2014). AACN estimates that the national faculty vacancy rate is 8.3%. In other words, 35,000 faculty positions will be needed by 2022 (McMenamin, 2014).

With the shortage of nursing educators, fewer students can be admitted into nursing programs. According to the National League of Nursing (NLN) (2006), 28% of applicants are qualified but cannot be accepted due to staff shortage and other factors. In other words, in the 2013-2014 school year, over 60,000 qualified applicants were turned away from nursing programs (AACN, 2014). Also, the Council on Physician and Nurse Supply (2008) estimated

that 30,000 more students should graduate to meet the nursing shortage (a 30% increase of the current graduation rates).

As the nursing shortage increases, student retention is also a growing concern. Retention, matriculation, and licensure of nursing students are critical to ameliorate the growing nursing shortage. Currently, the student composition is evolving to include more diverse students into nursing programs (Jefferys, 2012; Shelton, 2012). Factors, such as increased enrollment to associate degree nursing programs (Nardi & Gyurko, 2013) and the economic recession with unstable job security, continue to influence the growing number of diverse nursing students (Jefferys, 2006, 2012). By addressing students' needs, nursing educators can graduate more nurses who can satisfy the current nursing shortage.

With the growing concern of the nursing shortage and decreasing student retention, nursing educators need to implement various learning strategies and learning environments. Benner, Sutphen, Leonard, and Day (2010, p. 14) charged that “[c]lassroom teachers must step out from behind the screen full of slides and engage students in clinic-like learning experiences that ask them to learn to use knowledge and practice thinking in changing situations, always for good of the patient.” One way to achieve this goal is for teachers to incorporate active learning in their classrooms. Active learning encourages the students to construct their own knowledge (Anthony, 1996) and to take responsibility for their own learning (Fahlberg, Rice, Muehrer, & Brey, 2014). It also enables teachers to reach a variety of learning preferences (Ohman, 2010) and allows the learner to develop deeper understanding of the content (Ohman, 2010; Scheckel, 2012). Active learning is the active involvement of students in the learning process, in the content of the class, and in engagement with others in the classroom (Fahlberg, et al., 2014;

Scheckel, 2012). Strategies in active learning can include group discussions, case studies, team-based learning, problem solving, and simulations (Kantar, 2014; Ohman, 2010; Scheckel, 2012).

Virtual classrooms can provide a place for nursing educators to stretch beyond traditional pedagogy and to implement active learning strategies in their classroom (Weed, Spurlock, & Forehand, 2014). Virtual classroom, online learning, distance education, e-learning, hybrid courses, and blended learning are all terms used to describe teaching utilizing the Internet and other technologies (Halstead & Billings, 2012). Online learning has gained popularity in education due to its accessibility and flexibility for students and fewer overhead costs for the educational institutions (Cook, Dover, Dickson, Underwood, & Engh, 2014; Warelow, Wells, & Irwin, 2011). By using online learning, educators can incorporate active learning strategies easily and accommodate the needs of nursing students simultaneously.

### **Statement of the Problem**

As the number of nursing educators declines, retention and matriculation of enrolled nursing students is critical to address the nursing shortage. With the changing makeup of the population of nursing students, especially in associate degree nursing, retention of students has become more challenging (Jefferys, 2006; Shelton, 2012). The needs of nursing students are evolving and must be met to ensure their success in school (Jefferys, 2012). The online environment that uses active learning strategies can be an alternative learning milieu that can increase retention of nursing students. There needs to be more research on how new technologies in education can be applied to teach nursing students.

### **Statement of the Purpose**

The purpose of this study was to explore the effectiveness of scaffolding case studies in the blended learning environment versus traditional pedagogy on student achievement. Next,

results of this study will help educators design learning activities in their courses that encourage students to apply their newly acquired knowledge to clinical situations and to think about the process of their reasoning.

### **Significance of the Problem**

First, a study that examines the relationships of student achievement, active learning strategies, and online or blended learning can help add to the knowledge of the best teaching environments in nursing education. The National League of Nursing (NLN) listed as a research priority the “identification and evaluation of effectiveness of emerging technologies in the teaching of nursing decision-making skills” (2012, p. 1) and the “determination of the quality of and exposure to educational interventions that aim to achieve desired learning outcomes” (2012, p. 2). This study addressed both the areas of emerging technologies (blended learning) and of educational interventions (active learning strategies).

Secondly, the Institute of Medicine (IOM) published a report, *The Future of Nursing: Leading Change, Advancing Health* (2011), which established that in order to improve healthcare outcomes, nurses must achieve higher levels of education. Their goal was to have 80% of the nursing force have their bachelor of science degrees (BSN) by 2020 (IOM, 2011). Most of the content for an associate degree (ADN) nurse to earn BSN can be delivered in an online format (IOM, 2011). Online learning allows enough flexibility for nurses to continue working while they are earning their BSN degree (IOM, 2011). Introducing and familiarizing ADN students to online or blended learning can motivate them to pursue a higher degree and can ease their transition when they begin an online RN-to-BSN program (a nursing program that allows registered nurses to earn their BSN) (IOM, 2011).

Finally, identifying ways to increase student achievement can improve student retention and graduation rates. This identification assists educators to design appropriate learning strategies in the best learning environments to provide the optimal learning results (Finke, 2012). It will also help administrators to make the best evidence-based decisions when allocating resources (Knight, Folkins, Hakel, & Kennell, 2011). All these improvements will ultimately alleviate the current nursing shortage.

### **Theoretical/Conceptual Framework**

Although educators have tried transferring a didactic, traditional pedagogy to the online learning environment, these attempts were futile, at best, and often failed (Bromley, 2010; Edwards, Perry, & Janzen, 2011; Zsohar & Smith, 2008). An emerging paradigm that melds well with the e-learning platform is the learner-centered model, which applies the constructivist theory of learning (Kuiper, 2012; Paulus et al., 2010; Revere & Kovach, 2011). “Among the learning theories that have guided higher education, perhaps constructivism, the theory of multiple intelligences, and cognitive theory of multimedia learning, have the greatest likelihood of informing web-based distance education practice” (Meyer, 2002, p. 24). This shifting paradigm values learner-centered learning, peer interaction, collaborative learning, active learning, timely and constructive feedback, diverse modes of learning, authentic tasks, respectful learning environment, and contextually based cognition (Bromley, 2010; Edwards et al., 2011; Kuiper, 2012; Revere & Kovach, 2011). The constructivist theory of learning can inform educators how to design effective active learning strategies online.

Constructivist theory, an area of cognitive science, postulates that learners construct their own knowledge, building from current knowledge they already possess (Kala, Isaramalai, & Pohthong, 2009; Piaget, 1952; Pritchard, 2005). Unlike didacticism [the belief that the learner’s

mind is blank and ready for the teacher to deposit their content and expertise to these “blank” and passive learners (Freire, 2007)], constructivism requires learners to actively build their knowledge through assimilation or accommodation (Piaget, 1952). Assimilation occurs when a learner melds new content with already existing knowledge (Piaget, 1952). On the other hand, accommodation happens when new information contradicts the learner’s previous knowledge and the learner must adapt to cope with the inconsistencies (Piaget, 1952). Learners want to obtain equilibrium, the state when no conflict exists between the newly acquired knowledge and previous knowledge (Piaget, 1952). In other words, constructivists theorize that “students actively construct their own knowledge: the mind of the student mediates input from the outside world to determine what the student will learn. Learning is active mental work, not passive reception of teaching” (Woolfolk, 1993, p. 485).

Building from Piaget’s work, Vygotsky (1978) and Bruner (1966) argued that social interaction was also critical in the learner’s knowledge construction. The exchange and discussion of ideas stimulate and encourage construction of knowledge among learners (Bruner, 1966). Dialogue with others—often with a more knowledgeable person, but not necessarily so—allows learners to formulate new meanings and connections to previous knowledge (Bruner, 1966; Vygotsky, 1978). Typically, this more knowledgeable person would be a teacher, who could engage students in dialogue and support their new understanding (Bruner, 1966; Vygotsky, 1978). One way a teacher can accomplish this engagement and support is through scaffolding.

As Pritchard (2005, p. 31) articulated, “Scaffolding is the process of giving support to learners at the appropriate time and at the appropriate level of sophistication to meet the needs of the individual.” Building off the idea of Vygotsky’s (1978) zone of proximal development, scaffolding gives the support and tools a learner needs to construct a deeper understanding. The

zone of proximal development theorizes that the learner with assistance can master the next level of development that he or she could not have done independently (Vygotsky, 1978). Thus, scaffolding in the learning environment can improve the learner's development of understanding.

Another aspect of constructivism is situated contextual learning (Pritchard, 2005). Situated learning assumes that students learn in context and may not translate content to another context (Pritchard, 2005). Context becomes important for the learner and can determine how easily the student will learn based on their understanding of the context (Pritchard, 2005). For example, nursing students in the inner city would have trouble grasping the rural nursing concepts of patient autonomy and lack of healthcare due to traveling costs or to the inability to miss work. Situated learning and authentic tasks meld in harmony with each other.

Authentic tasks, practices that experts would do or tasks that allows students to apply what they learn in real life situations (Chen, Nurkhamid, Wang, Yang, Lu, & Chang, 2013; Pritchard, 2005), engage learners and benefit them in several ways. First, authentic tasks allow students to apply knowledge outside their current learning environment (Edelson & Reiser, 2006). Second, authentic tasks can provide learners meaningful experiences which motivate them and thus deepen their level of understanding and improve information recall (Chen et al., 2013; Edelson & Reiser, 2006). Third, authentic tasks help learners understand the underlying knowledge (or epistemology) of the study (Edelson & Reiser, 2006). Authentic tasks provide a way for educators to situate context for learners.

The last aspect of constructivism is the concept of metacognition (Pritchard, 2005). Metacognition is to think about and control the process of one's thinking (Flavell, 1976; Lauder, Reynolds, & Angus, 1999). When learners can understand how they learn and the best approach to use when learning, their learning is enhanced (Paris & Paris, 2001; Pritchard, 2005).

Educators should promote metacognition in learners to deepen understanding and to improve their ability to learn (Pritchard, 2005). Metacognition helps learners to understand how they learn most effectively.

These four aspects (knowledge construction, social interaction, situated learning using authentic tasks, and metacognition) form the essential elements of constructivism. Based on these four elements, the following features were used in the development of the active learning strategies in this study.

1. Knowledge is constructed and not transmitted. Learners are actively involved in their learning and must integrate new learning with previous conceptions (Piaget, 1952).
2. Reflection on prior experience and knowledge is critical to know how to assimilate or accommodate new knowledge (Piaget, 1952).
3. Scaffold content to ensure optimal learner development and understanding of the content (Pritchard, 2005).
4. Social interaction is vital for knowledge development. Dialogue between others provides other viewpoints when developing knowledge. Students should be exposed to multiple viewpoints to accurately construct their knowledge (Bruner, 1966; Vygotsky, 1978).
5. Authentic tasks provide a place for the students to learn in situated contexts (Edelson & Reiser, 2006).
6. Reflection on how the process of learning occurred is essential for future construction of knowledge (Pritchard, 2006).

These six essential features, derived from the constructivist learning framework, can assist educators in designing appropriate active learning strategies.

## **Research Questions/Hypothesis**

The following research questions guided this study:

1. Is there a difference in nursing students' achievement after they are introduced to scaffolding case studies in a blended learning environment?
2. Is there a difference in students' achievement from the course that used only traditional pedagogy versus the course that implemented the scaffolding case studies?

The null hypotheses were

1. There is no difference in nursing students' achievement after they are introduced to scaffolding case studies in a blended learning environment.
2. There is no difference in students' achievement from the course that used only traditional pedagogy versus the course that implemented the scaffolding case studies.

## **Assumptions of the Study**

The assumptions of this study are noted in the following statements:

1. Participants are familiar with and have mastered basic computer skills.
2. Participants have access to the Internet through a personal or school computer.
3. Participants have the skills needed to complete the active learning strategies.
4. Posttests will accurately measure participants' achievement in the course.

## **Limitations of the Study**

Limitations, which are not under the control of the researcher, allow other researchers to avoid misunderstanding the results of the study (Lunenburg & Irby, 2008). The limitations of this study included

1. The population was selected from only 60 possible participants. This size may decrease the generalizability of the study's results.

2. The population was only ADN nursing students, and the results may not translate to a diploma, BSN, or LPN nursing program.
3. The study took place during one semester (August 2015- December 2015).
4. The population was chosen from a rural community college in the southern United States. This narrow sampling in this study may not allow the study's results to generalize to urban community colleges or to other regions besides the southern United States.
5. Only case studies in collaborative groups were used as active learning strategies. Other active learning strategies could provide different results.
6. Sampling error may have resulted due to other factors that affect a participant's achievement (i.e., work or family responsibilities, financial strain, or student's concept of autonomy and self-efficacy).
7. Attrition rates could also have affected the results of this study. Participants are able to drop or withdraw from a class before final grades are determined.

### **Delimitations of the Study**

In order to gain a more robust population, the first delimitation of this study was to study participants enrolled in the first clinical nursing course, Fundamentals of Nursing. This course had the highest enrollment and the lowest retention of students in this nursing program. Also, the second delimitation was the selection of a rural community college as the site for this study. Lastly, to fulfill the significance of advancing registered nursing education further, only the ADN students (versus the licensed practical nursing students) were recruited for this study.

### **Operational Definitions of Terms**

*Active learning strategies.* Active learning strategies are defined as any activity that entails the learner to be actively involved with their learning (Fahlberg et al., 2014; Scheckel,

2012). Active learning strategies include—but not exclusively—group discussion, case studies, team-based learning, problem solving, collaborative learning, and simulations (Kantar, 2014; Ohman, 2010; Scheckel, 2012). For this study, the active learning strategies only included case studies and collaborative learning.

*Case study.* Leenders, Mauffette-Launders, and Erskine (2001, p. 3) defined the case study as a “description of an actual situation, commonly involving a decision, a challenge, an opportunity, a problem, or an issue faced by a person or persons in an organization.” The case studies in this research study consisted of clinical situations that nurses often face and required nursing students to make decisions and/or to solve problems. Case studies were one of the primary active learning strategies in this study.

*Collaborative learning.* In collaborative learning, learners work in teams and assume responsibility for their learning (Stiles, 2006). For this study, learners were asked to work in groups of four to six people to problem solve or make decisions from case studies. Collaborative learning paired with case studies was the active learning strategy used in this study.

*Blended learning.* As noted earlier, a variety of terms has been used for learning that uses the Internet and other technologies (Halstead & Billings, 2012). For this study, blended learning was traditional pedagogy face-to-face with active learning strategies online (using an information management system called Canvas).

*Online learning.* Online learning denoted courses that were taught only on the Internet with no portion of face-to-face instruction.

*Traditional pedagogy.* This term is to note the didactic belief of an expert teacher transmitting content into the blank mind of the learner (Freire, 2007; Moule, Ward, & Lockyer, 2010). For the purpose of this study, traditional pedagogy specifically meant an expert teacher

lecturing to students in a face-to-face classroom using PowerPoint presentation and did not involve any active learning strategies.

*Student achievement.* For this study, student achievement denoted success or a passing grade on posttests. At this nursing program and for this study, the grade of 74.5 or higher was considered successful or passing.

### **Summary**

To resolve the ever-increasing nursing shortage and nursing faculty shortage, improving learning strategies and learning environments is critical. This study focused on the active learning strategies of case studies and collaborative learning in a blended classroom. Also, this study evaluated the effectiveness of these strategies in nursing students' achievement. The evaluation of these strategies can assist nursing educators to design better nursing courses and improve the retention and matriculation of nursing students.

In Chapter II, an extensive review of the current literature of online and blended learning and active learning are summarized. Chapter III contains the methodology of this study, which includes the setting, participants, instrumentation, data collection, and data analysis. Chapter IV contains the results of this study. Lastly, Chapter V discusses the major findings, implications to practice, limitations, and recommendations that stem from this research study.

## CHAPTER II

### REVIEW OF THE LITERATURE

For the review of literature, the researcher analyzed and synthesized studies in three major research areas. The first section of the literature review will discuss online learning and blended learning. The next section will elaborate on active learning and its strategies (with an emphasis on case studies and collaborative learning). The last section will summarize the literature on blended learning and online learning.

#### **Online Learning**

Online learning, e-learning, distance education, web-based learning, and virtual classroom are all terms to describe the current trend of using the Internet and other technology to teach classes (Bristol, 2010b; Halstead & Billings, 2012). Students' push for greater accessibility, flexibility, and convenience has stimulated the growth of alternative deliveries of instruction (Zwirn & Muehlenkord, 2012). Even on-campus students expect greater integration of technology and flexibility when taking a higher education course (Bromley, 2010; Paulus et al., 2010). These marketing demands have contributed to the explosion of online learning, especially in the field of nursing (Warelow et al., 2011).

Although online learning has become prevalent in higher education institutions, standardized terms have not been established (Bristol, 2010b). Web-based courses, e-learning, distance education, and virtual classrooms often denote a class that is delivered entirely online. On the other hand, web-enhanced, web-supported, hybrid, or blended courses refer to the traditional, face-to-face classes that use technology to enrich the class content (Bristol, 2010b;

Halstead & Billings, 2012; Hsu & Hsieh, 2011a). Traditional pedagogy refers to the lecture-based, classroom oriented, face-to-face delivery of instruction without the use of the Internet or Internet-based technology (Bristol, 2010b; Moule et al., 2010). The majority of nursing programs are using the hybrid version to enhance their current curriculum; however, accelerated degrees and graduate nursing programs have been known to offer full web-based courses/programs as well (Bromley, 2010; Nelson, 2010; Warelow et al., 2011). By evaluating the practices of online learning, nursing educators can produce the most effective evidence-based teaching strategies to train students to become better nurses.

Due to the ambiguity of the technology terms of online learning and blended learning, only a few studies delineated online learning different from blended learning (Alseweed, 2013; Braid & Abdullah, 2013; Cook et al., 2014; Hsu & Hsieh, 2011a, 2011b; Moule et al., 2010). Most of the studies either did not differentiate between online learning and blended learning or considered blended learning part of online learning. This confusion of terms made it difficult to sift through the literature. Because blended learning is very similar to online learning and researchers often did not differentiate between the two terms, the literature review focused on online learning as a whole.

### **Benefits of Online Learning**

**For students.** Online learning has many benefits for the students. For the nontraditional students, accessibility, flexibility of time and of location, and convenience of online classes help them to integrate education with their other responsibilities (such as family and work) (Braid & Abdulla, 2013; Bristol & Gloor, 2007; Bromley, 2010; Halstead & Billings, 2012). Also, older adult learners tend to enjoy self-autonomy, collaborative learning, and building from personal experience that are typically integrated into an online course (Warelow et al., 2011). Since

traditional students have grown up in the digital age, they expect the integration of technology in their higher education classes and a different educational experience (Halstead & Billings, 2012; Lahaie, 2007; Montenery et al., 2013).

Online learning also provides cognitive benefits to students. Students who have used the virtual classroom have shown to improve their performance (Bromley, 2010; Hsu & Hsieh, 2011a; Lahaie, 2007; Revere & Kovach, 2011), to enhance their deeper learning and mastery of content (Kala et al., 2009; Lahaie, 2007; Revere & Kovach, 2011), and to improve their outcomes (Alseweed, 2013; Hsu & Hsieh, 2011a). They also increased their independent learning (Bromley, 2010), enhanced their metacognition (Hsu & Hsieh, 2011a), and promoted their life-long learning (Bromley, 2010). Hsu and Hsieh (2011a) have also found that using e-learning has improved students' self-regulatory development and has helped support nursing students' critical thinking. Online learning has helped students to develop computer skills to enhance their clinical practice (Lahaie, 2007; Moule et al., 2010) and to augment their communication skills (Neal., 2013). Several studies (Alseweed, 2013; Hsu & Hsieh, 2011a; Lahaie, 2007; Kala et al., 2009; Revere & Kovach, 2011) have found students are more satisfied and prefer the online learning environment. Kala et al. (2009) also discovered that using virtual classrooms helped increase students' motivation to learn.

Socially, online learning has demonstrated many advantages. Online learning has shown to augment student engagement (Cook et al., 2014; Lahaie, 2007; Warelow et al., 2011) and learning through that engagement (Bromley, 2010; Montenery et al., 2013; Kala et al., 2009). Also, online learning enhanced cohesion among the learners (Braid & Abdulla, 2013; Bristol, 2010a). Studies (Lahaie, 2007; Weed et al., 2014) have reported increased interaction among learners and a sense of community emerging. Also with the capability of equal participation

(Weed et al., 2014), online learning strategies, such as online discussions, equalize the students, allowing all of them to be able to respond without feeling pressured and giving them enough time to form a response (Bromley, 2010).

Other advantages of using online learning include how students learn, what they learn, how that learning affects them, and even who the students are. The online environment is more conducive to active learning strategies (Bristol, 2010b; Halstead & Billings, 2012; Revere & Kovach, 2011; Skiba, 2010; Warelow et al., 2011), which provide additional benefits themselves. Incorporating active learning strategies into the classroom is changing the paradigm of education, especially nursing education (Skiba, 2010). Now using active strategies online, teachers provide students with timely feedback (Halstead & Billings, 2012) and expose them to cutting edge online resources (Lahaie, 2007). In addition, educators allow students to study at a self-directed pace (Bristol, 2010a; Bromley, 2010; Moule et al., 2010) and give them learning opportunities that are more relevant to their experience and lives (Bromley, 2010). Using online learning has shown to assist in student retention (Revere & Kovach, 2011; Weed et al., 2014) and allow students to avoid the traditional campus atmosphere—if they want to—(Bristol, 2010a). Distance education, especially completely online programs, provides more availability of education to a larger and more diverse population (Cook et al., 2014; Neal, 2013). This broader reach and capacity to learn remotely has also brought practitioners to rural and underserved areas (Friesth, 2012). Online learning is revolutionizing nursing in how, what, and who educators teach.

**For educators.** Just as students have benefited from online learning, nursing educators have as well. The flexibility of teaching from home or remote locations (Cook et al., 2014; Kala et al., 2009; Warelow, et al., 2011) and the reduction of paper and travel costs (Lahaie, 2007;

Kala et al., 2009) attract educators to using virtual classrooms in their teaching practice. The ability to teach using different learning styles or multiple intelligences (Cook et al., 2014; Kala et al., 2009) and the capability to shift paradigms to a more learner-centered environment (Bromley, 2010; Kala et al., 2009; Revere & Kovach, 2011; Skiba, 2010) have also influenced educators to use the online environment. Educators can also enjoy an increase in academic freedom, because the visibility of the online courses can increase accountability and peer collaboration (Paulus et al., 2010). Educators who have used this platform for their classes have reported feelings of empowerment (Edwards et al., 2011; Kala et al., 2009), renewed energy and creativity in teaching (Cook et al., 2014), a greater intellectual challenge, and increased job satisfaction (Lahaie, 2007). They also felt freer to engage with their students and get to know them better (Cook et al., 2014; Kala et al., 2009; Lahaie, 2007).

In addition, distance education has improved educators' course design and course management skills (Revere & Kovach, 2011) and facilitated high-quality and more consistent teaching (Kala et al., 2009). Educators are also able to expand their teaching (Weed et al., 2014), to continually improve the course or program (Paulus et al., 2010), and to meet the needs of a diverse student population (Bristol, 2010b). All these advantages have persuaded many nursing educators to incorporate online technology into their teaching practice. To prepare nursing educators and to provide a quality educational experience (the goal of all teachers), researchers will need to study best educational practices online, and faculty development should be based on these research studies (Lee et al., 2010).

### **Disadvantages and Barriers to Online Learning**

**For students.** Online students have experienced disadvantages to online learning: social isolation (Braid & Abdulla, 2013; Bristol, 2010a; Bromley, 2010; Kala et al., 2009),

technological problems (Bristol, 2010a; Cook et al., 2014; Hsu & Hsieh, 2011a; Kala et al., 2009; Moule et al., 2010; Warelow et al., 2011), and outdated/poor instruction online (Edwards et al., 2011; Nelson, 2010; Paulus et al., 2010). Due to lack of face-to-face time with others, students can experience social isolation (Bromley, 2010) and often drop out of class (Braid & Abdulla, 2013). To overcome this obstacle, online educators can incorporate assignments with interactions with peers and with the instructor (Bromley, 2010; Edwards et al., 2011).

Technological problems, such as outdated browsers, crashed computers, and slow bandwidths, can easily derail a student's progress in the course (Bristol, 2010a; Bromley, 2010; Hsu & Hsieh, 2011a; Moule et al., 2010; Warelow et al., 2011). Technological support systems and accessibility to institutional technology resources (such as computer labs, internet) are needed to overcome this disadvantage (Cook et al., 2014; Friesth, 2012; Nelson, 2010; Weed et al., 2014). Mandating a certain level of computer competency (Cook et al., 2014) and minimal level of Internet connection (Friesth, 2012) can alleviate these struggles as well. Poor instruction, such as instructors transferring the didactic designed classes to the online platform (Moule et al., 2010), incorporating too much technology in the class, or not updating all the links in the class, can frustrate and overwhelm students (Skiba, 2010). Good course planning and design, faculty peer evaluation, and use of active learning strategies can overcome these poor instructional techniques (Paulus et al., 2010; Skiba, 2010).

Likewise, other disadvantages can emerge for students taking online classes. Older students are often uncomfortable using technology (Warelow et al., 2011) and may need a mandatory computer introduction course before starting online classes (Cook et al., 2014). A lack of printed materials and being unfamiliar with online learning can make students feel uncomfortable in an online class (Kala et al., 2009). An orientation to the online course

(Halstead & Billings, 2012; Moule et al., 2010) and using a course management system (Friesth, 2012) can ease the anxiety of these students. For online students, learning activities (such as discussion boards) can be very time consuming or difficult (Kala et al., 2009; Lahaie, 2007; Warelow et al., 2011). Again, good course planning (Paulus et al., 2010; Skiba, 2010) and academic rubrics for assignments (Cook et al., 2014; Halstead & Billings, 2012) can eliminate this frustration. Lastly, students have reported feeling a sense of constant surveillance and have felt exposed and vulnerable (Weed et al., 2014).

Barriers, such as poor time management (Cook et al., 2014), lack of self-direction/motivation (Moule et al., 2010), access to a personal computer and the Internet (Cook et al., 2014; Moule et al., 2010), and lack of skills in using technology (Braid & Abdulla, 2013; Lahaie, 2007; Weed et al., 2014) can prevent students from being successful online (Bromley, 2010; Mancuso-Murphy, 2007). Educators are encouraged to monitor how often students log on the course website. Infrequent visits may be due to poor time management, lack of motivation, or technological problems, which all can be remedied with the help of the instructor and outside resources (through tech support center or computer lab) (Mancuso-Murphy, 2007). Other options to overcome barriers are to provide an orientation to course management system and other online technologies that the students will encounter in their educational career (Bristol, 2010a; Halstead & Billings, 2012; Lee et al., 2010; Nelson, 2010) and to use the blended learning format to introduce the online environment to students with the security of a traditional classroom (Lahaie, 2007).

Students' misperceptions of online learning can also produce several barriers. Students can assume that less or no classroom time indicates less work (Cook et al., 2014), or have fear or anxiety when using technology (Bromley, 2010; Paulus et al., 2010). Moule et al. (2010) also

reported that students can have a lack of group commitment to collaborative online learning, which can create tension and negative feelings among group members. Moreover, in group discussions, students begin to disengage when oversaturation of the same opinions occur (Braid & Abdulla, 2013). Also, students tend to procrastinate more online (Talbert, 2009). Similarly, students may be unfamiliar with the role of being responsible for their own learning, which is more obvious in the independent, self-driven environment of online learning (Cook et al., 2014). To resolve these barriers related to misperceptions, educators need to establish clear expectations for students, including rubrics for assignments (Cook et al., 2014; Halstead & Billings, 2012), to incorporate peer evaluation and grading in group projects (Rowles, 2012b), to pose opposing opinions to stimulate online discussion and to increase student engagement (Braid & Abdulla, 2013), and to accurately advise students on which type of classroom environment where they would be most successful (Cook et al., 2014).

**For educators.** Like students, disadvantages and barriers exist for educators who teach online. Trying to convert a traditional lecture-based course to the online environment can result in poor quality in the delivery of content (Moule et al., 2010; Nelson, 2010; Paulus et al., 2010) and will frustrate students. Transforming the didactic classroom-based course to a learner-centered online course can be time consuming, expensive, and may not have sufficient administrative support (Kala et al., 2009). Educators must not overly rely on static materials and underutilize technology (Moule et al., 2010; Revere & Kovach, 2011). Faculty have reported challenges in finding updated, relevant, and engaging content for class (Rapchak & Behary, 2013) and in copyright concerns (Bristol, 2010b). They also reported increased academic dishonesty (Bristol, 2010b; Cook et al., 2014), the inability to gauge students' reactions and

understanding to course content (Bromley, 2010; Bristol, 2010b), and students' using rude or inappropriate communication online (Weed et al., 2014).

Implementing these following solutions can diminish these disadvantages. For teachers that are changing their course designs, administrators can show their support through recognizing the challenge of teaching online when deciding promotion and/or tenure, monetary assistance or leave time for course planning and redesign, capping course enrollment to prevent too many students in the course, and incentives (such as stipends, overload pay, or increased salaries) (Lahaie, 2007; Paulus et al., 2010). Also peer reassurance, such as sharing with colleagues and role modeling, can help educators design courses in the learner-centered approach using relevant, current, and appropriate course materials (Lahaie, 2007). Issues with copyright concerns can be cleared up through establishing institutional policies on copyright materials and knowing copyright regulations (Bristol, 2010b). To reduce academic dishonesty, educators need to redesign the course to incorporate active learning strategies (instead of just multiple choice tests) to evaluate learning (Bristol, 2010b) and to gauge students' understanding (Rowles, 2012a). Stating the rules of etiquette online (also known as Netiquette) eliminates most rude or inappropriate communication (Bristol, 2010a; Warelow et al., 2011; Weed et al., 2014).

Besides the disadvantages inherent in teaching online, faculty also have barriers to overcome. One common barrier is the faculty's varying levels of experience and comfort in using technology (Cook et al., 2014; Montenero et al., 2013). Oftentimes the students have more experience and knowledge in using online technology (Monternery et al., 2013). Many studies (Braid & Abdulla, 2013; Bristol, 2010b; Cook et al., 2014; Hsu & Hsieh, 2011a; Lahaie, 2007; Moule et al., 2010; Paulus et al., 2010; Weed et al., 2014) have shown that educators' computer literacy was a major barrier and can affect the development and utilization of online learning.

Implementing professional development courses (Friesth, 2012; Nelson, 2010; Paulus et al., 2010), using peer reassurance (especially role modeling) (Lahaie, 2007), and gaining support of a professional instructional designer or technical resource center for faculty (Bristol, 2010b; Cook et al., 2014; Lahaie, 2007) can overcome this major barrier.

Another barrier for educators is their perception of online learning. Some faculty view online learning as inferior or poorer in quality than traditional pedagogy (Lahaie, 2007). Others feel unprepared to teach online or have great anxiety or fear of teaching online (Lahaie, 2007). Many educators resist change or have intellectual reluctance, because online learning changes the role of educators to facilitator and contradicts their teaching philosophy (Lahaie, 2007; Paulus et al., 2010). Identifying the cause of the educators' resistance and using these findings to design professional development courses (Friesth, 2012; Paulus et al., 2010; Warelow et al., 2011), integrating educators in the planning process of incorporating online classes (Paulus et al., 2010), and using role modeling with experienced online educators (Lahaie, 2007) can alleviate these barriers.

Administratively, online learning has several drawbacks to consider when implementing these courses. First, online learning initially is expensive to implement and maintain due to the infrastructure required to sustain such a program (Bristol, 2010b; Friesth, 2012). Second, online courses need to maintain requirements of accreditation to ensure quality nursing programs (Talbert, 2009). Third, the government has restrictive rules and regulations of how much online learning an institution can offer and still receive federal financial aid (Nelson, 2010). Lastly, budget constraints influence decisions about online learning (Boswell & Cannon, 2010) and institutional change will occur with the inclusion of online learning (Paulus et al., 2010).

## Effectiveness of Online Courses

Are online courses as effective as the traditional face-to-face classes? Studies have shown that student achievement is the same in both online and in traditional classrooms [Bata-Jones & Avery, 2004 (n=18, two tailed *t*-test analysis,  $p<0.05$ ); Coose, 2010 (n=165, two tailed *t*-test analysis,  $p<0.05$ ); Leasure, Davis, & Thievon, 2000 (n=66, chi square and *t*-test analysis,  $p<0.05$ )]. Both student achievement and learning outcomes have no significant difference between the online, hybrid, and traditional classrooms [Buckley, 2003 (n=58, ANOVA and chi square analysis,  $p<0.05$ ); Hsu & Hsieh, 2011a (n=124, paired *t*-test and Wilcoxon Signed Ranks test,  $p<0.05$ )]. In addition, students were more satisfied in the online courses [Billings, Connors, & Skiba, 2001(n=219, ANOVA analysis,  $p<0.05$ ); Hsu & Hsieh, 2011a (n=124, paired *t*-test and Wilcoxon Signed Ranks test,  $p<0.05$ )]. Thus, students are not compromised or handicapped for taking an online class rather than a traditional course.

Although most studies show no significant difference between online courses and traditional pedagogy, the U.S. Department of Education (2009) (meta-analysis of 51 empirical research studies), Alseweed (2013) (n=34, chi square analysis,  $p<0.05$ ), and Melton, Graf, and Chopak-Foss (2009) (n=251, ANOVA analysis,  $p<0.05$ ) found significantly higher student achievement in the blended learning format than in a completely online course or in a traditional classroom. These discrepancies in the findings may be due to the way the technology was utilized and not due to the incorporation of technology (Halstead & Billings, 2012; Lahaie, 2007; Neal., 2013). Educators must design effective pedagogy and incorporate technology as it fits the needs and learning objectives of that course (Halstead & Billings, 2012; Lahaie, 2007). Kala et al. (2009) found that the quality and appropriateness of the materials determined the learning outcomes: the better the quality of online materials, the higher the posttest scores. Also,

significantly higher scores were related to increased time that the student spent online (Hsu & Hsieh, 2011a). Those students that participated above and beyond what was required in the online discussions achieved higher grades (Hsu & Hsieh, 2011a).

Other unintentional effects materialized, including the more active participation of the learners (Skiba, 2010; Warelow et al., 2011), the presence of deeper understanding and higher cognitive skills (Bromley, 2010; Kala et al., 2009; Revere & Kovach, 2011), and the emerging voice of the “quiet” students (Bromley, 2010; Cook et al., 2014; Talbert, 2009; Weed et al., 2014). Since the online environment is more conducive to the constructivist (or learner-centered pedagogy) theory of learning (Friesth, 2012; Kala et al., 2009; Lahaie, 2007; Neal, 2013; Nelson, 2010), educators have incorporated more active learning strategies in their online classes (Skiba, 2010; Warelow et al., 2011). This inclusion of learning strategies encourages and motivates students to actively engage with the content of the course (Bristol, 2010b; Halstead & Billings, 2012; Revere & Kovach, 2011; Skiba, 2010; Warelow et al., 2011). When students actively engage in their learning, their understanding of the content deepens, and their ability to master their learning grows (Bromley, 2010; Kala et al., 2009; Lahaie, 2007; Revere & Kovach, 2011). Online active learning strategies, such as online discussions, allows the “quiet,” more introverted student to contribute their perspective and to be heard (Bromley, 2010; Cook et al., 2014). In the traditional classroom setting, quiet students can feel intimidated, and louder, more extroverted students can dominate the classroom discussions (Braid & Abdulla, 2013; Bristol, 2010a). The online environment can be a less intimidating environment allowing more introspective students time to respond in discussions (Cook et al., 2014; Talbert, 2009).

## **Emergence of a New Paradigm**

As educators shift their classrooms to online, the old ways of traditional pedagogy are incompatible with the virtual classroom (Boswell & Cannon, 2010; Hsu & Hsieh, 2011a; Revere & Kovach, 2011). Educators have used Knowles' adult learning theory (Lahaie, 2007; Neal, 2013; Rapchak & Behary, 2013), Chickering and Gamson's (1987) "Seven Principles for Good Practice in Undergraduate Education" (Halstead & Billings, 2012; Lahaie, 2007; Neal, 2013; Nelson, 2010; Paulus et al., 2010), and Billings et al.'s (2001) benchmarks for effective online learning (Lahaie, 2007; Nelson, 2010) on which to base their course design. However, the most commonly used theory of learning in the online environment is the learner-driven theory of constructivism (Friesth, 2012; Kala et al., 2009; Lahaie, 2007; Neal, 2013; Nelson, 2010). Regardless of which learning theory is used, educators agree that theory should drive online course design to enhance quality, to increase course effectiveness, and to improve learning outcomes (Glen, 2005; Halstead & Billings, 2012; Kala et al., 2009; Thurmond, 2002).

In constructivism, the learner is the focus (Bristol, 2010a, 2010b; Friesth, 2012), and the educator facilitates the student (Alsewood, 2013; Kala et al., 2009). The learners construct their knowledge, building from previous knowledge or experiences (Piaget, 1952). Learning is more powerful when learners construct their own understanding (Hsu & Hsieh, 2011a). Also, the incorporation of social interaction and authentic tasks in situated contexts deepen the students' learning (Bruner, 1966; Edelson & Reiser, 2006; Vygotsky, 1978). Lastly, students improve their metacognition through reflection of their learning process (Halstead & Billings, 2012; Pritchard, 2005). Using this paradigm of learning has changed the roles and qualities of teachers, the qualities of students, the design of the course, and the use of different technologies in online instruction.

**Roles and qualities of online educators.** Edwards et al. (2011) identified three roles of exemplary online teachers: challenger, affirmer, and influencer. As a challenger, an online educator must set high standards and believe in higher potential in students. Challengers also provide timely and constructive feedback, empower students to take responsibility for their learning, and provide a strong cognitive presence online to engage students. In the affirmation role, educators need to establish open communication and to recognize potential in students. Affirmers also treat students with respect, recognize potential problems and assist students to address these problems, and motivate students. Moreover, affirming educators create a sense of caring online and promote self-efficacy/esteem (Edwards et al., 2011; Halstead & Billings, 2012). These affirmers are also responsive, uplifting, and available to students (Alvarez, Guasch, & Espasa, 2009; Edwards et al., 2011). The influencer has existing knowledge and/or expertise in the subject matter, provides clarity on the content, and establishes an online presence. Influencers also role model professionalism and expert critical thinking and influence students (Cook et al., 2014; Edwards et al., 2011).

In addition to these roles, nurse educators are also co-creators of knowledge, facilitators, and course designers (Edwards et al., 2011; Zshoar & Smith, 2008). The co-creators of knowledge build a community of inquiry (containing the qualities of honesty, responsiveness, relevance, respect, openness, and empowerment). They also value students' opinions, engage with the learners, and are enthusiastic and life-long learners (Bromley, 2010; Edwards et al., 2011; Revere & Kovach, 2011). The online nursing educator must also be a facilitator, who provides a positive and "safe" learning environment. Facilitators are also technology proficient, prioritize and organize communications and assignments, assist in peer interactions, and respect students (Braid & Abdulla, 2013; Cook et al., 2014; Palloff & Pratt, 2007; Revere & Kovach,

2011). Lastly, as a course designer, an online educator must be organized, provide clarity, and be adept at instructional designing and at time management (Alvarez et al., 2009; Edwards et al., 2011; O'Neil, Fisher, & Newbold, 2004).

Alvarez et al. (2009) delineated five distinct roles for online educators: course designing and planning, social, cognitive, technological, and managerial. In course planning, educators transform didactic content to a virtual platform determining procedures of instructional design and prepare learning strategies to complement chosen course objectives. Socially, online instructors manage the synchronous and asynchronous communications between learners and between themselves and other students. Through this role, educators dispel and mediate any miscommunications, identify areas of disagreement, prompt and encourage discussions, and assist in cooperative learning. Using the cognitive role, educators know and implement active, reflective, collaborative, and constructive learning. Also, they assist students to build a deeper understanding of the course's content and effectively evaluate the learner's understanding. Knowing how to use technology (especially the course management systems) effectively and efficiently and collaborating with the technology resource centers and/or instructional designers are all tasks instructors implement in the technological role. Educators, as managers, deliver and manage all aspects (i.e., communications, expectations, learning needs, content, assignments) of the online course (Alvarez et al., 2009).

**Qualities of online students.** In order for students to be successful online, they must possess certain qualities and learn specific skills. Qualities, such as highly motivated (Cook et al., 2014), independent (Halstead & Billings, 2012; Hsu & Hsieh, 2011a), focused and determined (Talbert, 2009), resilient (Bristol, 2010a), and assertive (Bromley, 2010), complement the self-paced, independent environment of online learning. Students who possess

these qualities excel online. Successful online students also have time management and priority skills (Braid & Abdulla, 2013; Talbert, 2009), excellent study habits (Bristol, 2010a), technology skills (O'Neil et al., 2004), and organization (Cook et al., 2014). These skills can be learned and perfected, especially in the virtual classroom (Cook et al., 2014; Hsu & Hsieh, 2011a).

Often the online format and accessibility of distance education attract more nontraditional students (Bristol, 2010a). These older adult learners tend to be self-directed, have life experience to draw on, and to be intrinsically motivated. These learners approach learning as problem solving and may have had past negative learning experiences with traditional courses (Knowles Holton, & Swanson, 2005). To be successful, online students should possess the following qualities: active learner, technology proficient, self-motivated, not easily discouraged, responsible, and proficient at managing their time (Braid & Abdulla, 2013; Cook et al., 2014; O'Neil et al., 2004; Talbert, 2009). Other characteristics of successful online students include life-long learner, independent worker, autonomous, and proficient communicator (Bristol, 2010a; Bromley, 2011). These characteristics translate well into the nursing profession; therefore, the online format can socialize and prepare students to be nurses.

**Online course design.** Transitioning from the traditional classroom to the online forum has been the catalyst of rethinking course design and delivery (Paulus et al., 2010). Educators must move from lecturing to active learning (Bromley, 2010; Bristol, 2010a, 2010b) and design courses to engage learners (Revere & Kovach, 2011). Learning theories, such as constructivism, can guide instructional course design (Hsu & Hsieh, 2011a) and assist in choosing the appropriate technology and learning strategies to use (Revere & Kovach, 2011). Many active learning strategies can be used in both the traditional and online classroom (Lahaie, 2007). High quality course design will incorporate active student participation, encouraging and respectful

climate, safe and humanizing learning environment, and clear communication from the educator (White, Roberts, & Brannan, 2003). A successful course will also be organized and structured (Bristol, 2010b; Nelson, 2010; Rapchak & Behary, 2013; Weed et al., 2014).

With the shifting, learner-centered paradigm, educators should employ instructional design techniques and apply learning theories to provide a better quality educational experience (Halstead & Billings, 2012). One such design technique, the ADDIE (Analyze, Design, Develop, Implement, and Evaluate) model, can assist nursing educators in designing the course, because it is similar to the already familiar nursing process (assess, diagnose, plan, implement, and evaluate) (Lee et al., 2010). In the first step, educators must assess their learners in order to meet their needs and identify their learning objectives (Nelson, 2010). Secondly, online nursing educators design the course based on the needs assessment of the learner (Lee et al., 2010). Thirdly, in the development stage, educators outline course content, create a syllabus, and design learning experiences to include the ideals of the new learner-focused paradigm (Nelson, 2010). Fourth, implementing the course design by using various web technologies that enhance—not overwhelm—the learning objectives (Nelson, 2010; Skiba, 2010). Lastly, educators must evaluate the effectiveness of their course design to continuously improve the quality of the online course (Nelson, 2010).

**Use of various technologies.** Various Internet technologies can be used to implement the design of the course; however, the learning objectives should guide which technologies to use (Bristol, 2010b; Skiba, 2010). To support powerful learning, educators must select quality technological materials (Kala et al., 2009) and multimedia experiences that establish an appropriate level of rigor (Cook et al., 2014). Although use of technology is only restrained by the availability of the technology and capability of the educator (Warelow et al., 2011), Skiba

(2010) also warned online instructors to avoid overloading the course with too much technology that can detract from the educational experience. “Technology should enhance the learning experience and not *be* the learning experience” (Lahaie, 2007, p. 337).

Course management systems (such as Blackboard, WebCT, Canvas) are commonly available for educators to use to design, implement, and evaluate their course (Friesth, 2012; Halstead & Billings, 2012; Moule et al., 2010). Some applications are embedded into the course management system, such as discussion boards, emails, announcement pages, chat sessions, blogs, links to other web pages, and uploading of course material (Bristol, 2010b; Halstead & Billings, 2012; Nelson, 2010; Revere & Kovach, 2011). Other technologies that are not incorporated in the course management systems include wikis, social networks (i.e. Twitter, Facebook), audio/video (such as Wimba, Skype, Voicethread, PowWowNow), collaboration tools (i.e., Google docs, Google scholar, Google tasks, Ning, LinkedIn) and video and podcasts (i.e., YouTube, TeacherTube, iTunes U, Jing, CamStudio, Camtasia, ScreenToaster, PodBean) (Friesth, 2012; Revere & Kovach, 2011). Even games and virtual reality (such as Second Life) have been used in online education (Moule et al., 2010). With such a plethora of resources, online educators can individualize and creatively design their course to enhance the learning experience.

## **Summary**

When infused with active learning strategies from the constructivist paradigm, online learning can be very effective. It can also benefit both students and educators in numerous ways. Although learning online has many drawbacks, educators can employ many solutions to alleviate these barriers. Through effective course design, educators can produce a quality learning

experience for students. A more thorough discussion of active learning is needed to understand the complementary nature of using technology in conjunction with active learning.

### **Active Learning**

When students take in information from lectures, readings, or audiovisual media, students are passively learning (Scheckel, 2012). In nursing education, the overreliance on lecturing has produced passive learners (Fahlberg et al., 2014). Lectures allow faculty to present a great deal of content in a short amount of time (Scheckel, 2012). This aspect gives this teaching method its major advantage: economy of time (Caputi, 2010). This teaching strategy also gives the educator the maximum amount of control of the classroom, allows higher student-teacher ratios (Caputi, 2010), and gives both faculty and students comfort, because they were socialized to passive learning in their previous learning experiences (Scheckel, 2012). However, lecturing prevents instructors from effectively evaluating student understanding and does not allow students to practice and develop critical thinking and higher-level cognitive skills. It also inhibits creative thinking and seems boring and dull which decreases students' attention (Caputi, 2010; Scheckel, 2012).

On the other hand, educators have started incorporating active learning in their teaching practice. Bonwell and Eison (1991, p. 2) defined active learning as “anything that involves students in doing things and thinking about the things they are doing.” Active learning can also be described as any activity that requires participation from the learner (Baumberger-Henry, 2005; Brandon & All, 2010; Scheckel, 2012). Anthony (1996) described active learning as activities that give learners autonomy and self-direction and as the quality of students' mental experience when actively engaging in intellectual inquiry. Also, it can be defined as student engagement with construction of ideas, concepts, and skills that are instructor designed and

directed (Institute for Excellence in Teaching and Learning [IETL], 2006). Educators are integrating active learning into their classrooms as an effective learning strategy for learners (Middleton, 2012). Unlike passive learning, active learning increases student involvement and empowers students to take responsibility for their own learning (Brandon & All, 2010; Scheckel, 2012). It also centers learning around the student (Heinrich, Pennington, & Kuiper, 2012) and provides opportunities for critical thinking and reasoning to develop nurses who can provide a high quality holistic care (West, Usher, & Delaney, 2011).

### **Advantages of Active Learning**

When educators integrate active learning strategies into their teaching practice, students benefit in many ways. Active learning has shown to improve students' clinical decision-making (Heinrich et al., 2012), to improve testing results (Brandon & All, 2010), and to gain a deeper understanding of course content (Scheckel, 2012). Students in active learning classrooms display improved problem solving (Heinrich et al., 2012), greater attentiveness to learning, enhanced retention of information, and increased desire to learn (Scheckel, 2012). Socially, they have demonstrated better communication skills (Heinrich et al., 2012) and teamwork skills (Scheckel, 2012). Clark (2007) and Snelgrove (2004) also reported that students feel a greater sense of accomplishment, have a desire to use multiple learning styles, and have an increased assimilation of learning. Students in active learning classrooms have demonstrated less anxiety and greater ability to rapidly and easily adapt (Brandon & All, 2010).

### **Disadvantages of Active Learning**

Although all of these demonstrated cognitive and social gains have persuaded many educators to start using active learning, many disadvantages and challenges arise from using active learning in the classroom. Faculty find designing and implementing active learning

strategies is time consuming and increases their workload (Andersen, Stropmel, Fensom, & Andrews, 2011; Popil, 2010). Faculty must educate themselves on the best way to plan and to implement these learner-centered activities. Inexperienced educators or experienced educators in a new course may not have adequate command of the content to be comfortable in using active learning (Scheckel, 2012). Also instructors may not be prepared to experience the ambiguity that active learning can bring and may not like the feeling of not being in control of the classroom (Brandon & All, 2010; Scheckel, 2012).

Similarly, some educators are afraid of unfavorable student evaluations, because many students actively resist the change that active learning brings (Purtee, Ulloth, & Caputi, 2010; West et al., 2011). Students are trained to listen to lectures and passively intake information (Scheckel, 2012) and to learn how to learn in a new way is stressful (Sand-Jecklin, 2007). Students become impatient and do not want to put forth the effort that active learning takes (Sand-Jecklin, 2007; Scheckel, 2012). In order to be successful, faculty will need to garner support of administration and other faculty and will need to convince students of the advantages this new way of learning gives them (Andersen et al., 2011; Scheckel, 2012).

Like educators, students can experience some challenges with active learning. In the large classes, students can have different experiences (which may not be comparable to each other) with active learning. Some students may lack the prerequisite knowledge needed to complete the active learning assignment, or they may misunderstand what is required of them and what the assignment is asking. Students can stress or have anxiety over learning in a new way, which can interfere with their participation in the activity (Scheckel, 2012). Educators can alleviate these challenges through requiring prerequisite courses, providing explicit instructions

on how to complete the active learning strategy, and answering any questions that the students may have about the activity (Scheckel, 2012).

### **Active Learning and Constructivism**

Active learning melds well with the constructivist theory of learning. Constructivism involves learner-centered instructions that allow learners to build their own understanding of the content, and active learning strategies help facilitate this construction of knowledge (Kantar, 2014; Kuiper, 2012). Engaging the students in their learning is essential for them to be able to construct new knowledge and enables them to solve real world problems (Kantar, 2014). Educators can incorporate the four aspects of constructivism (knowledge construction, social interaction, situated learning using authentic tasks, and metacognition) into a classroom through active learning activities (Brandon & All, 2010).

Constructivism requires students to use previous knowledge to interpret and assimilate or accommodate new knowledge into their understanding of the content (Anthony et al., 1996; Brandon & All, 2010; IETL, 2006; Piaget, 1952). In order to achieve this goal, students need to be engaged with the concepts and ideas and use them in a practical and authentic way (Kantar, 2014; Rolloff, 2010). Active learning activities (such as collaborative learning, team-based learning, case studies, problem-based learning) can encourage students to interact with each other and use their previous knowledge to solve real world problems or to produce an authentic practice of nursing (Baumberger-Henry, 2005; Brandon & All, 2010; Kuiper, 2012). Integrating these activities can improve learners' critical thinking, collaboration skills, and personal inquiry (all qualities essential for the nursing field) (Rolloff, 2010).

Not all active learning is constructivist based. When designing active learning strategies, educators need to include the six essential features of constructivism. Active involvement of the

student to construct knowledge is inherently built into these learning strategies. On the other hand, reflection of prior knowledge and experience, scaffolding content, social interaction, authentic tasks, and reflection on the process of learning needs to be deliberately integrated into the active learning strategies (Pritchard, 2005). Planning what outcomes and objectives the students are to achieve can determine what type of active learning activities to design and include in the classroom (Scheckel, 2012). This deliberate design can help learners with deeper thinking and achieve higher order thinking levels (Kantar, 2014; Kuiper, 2012).

### **Active Learning Strategies**

**Introduction.** Effective active learning relies on the educators' ability to design and implement active learning strategies (Scheckel, 2012). "Learning strategies are behaviours and thoughts affecting the learners' motivation or affective state, or the way in which the learner selects, acquires, organizes, and integrates new knowledge" (Anthony, 1996, p. 351). These strategies are a critical part of the active learning process (Anthony, 1996). Several principles of selecting learning strategies can guide educators in designing them. To assist learners in applying knowledge, educators need to avoid memorization, to use concept-based (not content-based) materials, to use real-world situations, and to help learners integrate previous knowledge. Instructors need to facilitate learners' self-regulation through giving choices on assignments or content of assignments and through encouraging reflection of learning (metacognition). To help develop intellectual capacity, educators need to structure the activity (using rubrics or criteria), to introduce many viewpoints and perspectives, and to assist decision making. Lastly, teachers can help learners retain knowledge through repetition of concepts, through using active learning instead of passive learning, through facilitating collaborative and peer learning, and through giving immediate feedback (Davis, 2009).

Educators have designed and implemented several active learning strategies. The course objectives determine what type of active learning strategies will be used. Some active learning strategies (such as team based learning, collaborative learning, small group work, cooperative learning, think-pair-share, paired pop quizzes or discussion of homework, role playing, and peer notes comparison) emphasize peer interaction (Andersen et al., 2011; Baghcheghi, Koohestani, & Rezaei, 2011; Caputi, 2010; Fahlberg et al., 2014; Ohman, 2010). Other activities (i.e., problem-based learning, case studies, investigational learning, simulations) emphasize real world problems or tasks used in professional practice (Anthony et al., 1996; Brandon & All, 2010; IETL, 2006; Kantar, 2014; Ohman, 2010). Similarly, several strategies divulge student understanding and help them use and apply concepts: 1-minute papers, debate, clickers (student response systems), gaming, concept mapping, and Socratic questioning (Baghcheghi et al., 2011; Heinrich et al., 2012; Ohman, 2010). Lastly, active learning strategies (for instance, journaling, narrative pedagogy, reflection) can promote reflection and self-evaluation. When selecting appropriate learning strategies, educators should use their designed objectives and evidence-based practice and theories of learning to guide their choices (Ohman, 2010; Scheckel, 2012). For this study, the researcher used case studies and collaborative learning as the active learning strategies.

**Case studies.** Case studies are a description of a scenario from which students must solve a problem or make a decision (Leenders et al., 2001; Popil, 2010). In nursing education, case studies consist mostly of patient situations that require nursing students to use critical thinking and decision-making skills (Heinrich et al., 2012; Ohman, 2010). This active learning strategy allows nursing students to make decisions in a safe environment without any potential harm to a patient (Baumberger-Henry, 2005). Case studies, a learning strategy in problem-based

learning, permit students to engage in their learning and to postulate various solutions or plans of care. Students also learn through peer dialogue, use prior knowledge, and self-evaluate how they performed in the simulated situation (Kantar, 2014; Popil, 2010). Case-based learning prepares students to make nursing decisions in the real world and to critically think (West et al., 2011).

Problem-based learning has roots in constructivist theorists: Dewey, Bruner, and Piaget (Kantar, 2014). Likewise, the principles of problem-based learning are similar to the elements of constructivism. The six principles of problem-based learning include engaging in learning, generating interest in solving real-world problems, reflecting on previous knowledge, observing through self-inquiry, constructing knowledge, and evaluating one's self (Kantar, 2014). Incorporating these principles can help educators ensure effective design and implementation of case studies (Kantar, 2014).

Case-based learning proves to be beneficial in many ways. Besides decision making and critical thinking, it fosters collaboration and competence (Purtee et al., 2010) and promotes active learning (Popil, 2010). Case studies integrate course content into authentic situations helping students to learn (Purtee et al., 2010). While participating in this active learning strategy, students learn to work together and solve problems through team effort (Baumberger-Henry, 2005). They also gain multiple perspectives, critique each other's contributions, and learn conflict resolution (Purtee et al., 2010).

When developing case studies, DeYoung (2003) recommended five steps. First, educators need to develop learning objectives—what does the learner need to know and understand, to demonstrate, and/or to adopt. Secondly, nursing instructors need to adopt a situation, often based on their nursing experience. The third step is to develop character as believable patients with real world problems. Fourth, faculty need to develop discussion

questions (DeYoung, 2003), which can be open-ended or NCLEX-style depending on the purpose of the case study (Purtee et al., 2010). Finally, teachers need to lead group discussion to identify and resolve any misconceptions and to stimulate further discussion to a deeper level (DeYoung, 2003).

Educators have used different types of case studies. Traditional case studies, which can be done individually but more often in small groups, include a real patient scenario that allows students to practice critical thinking and reasoning required of nurses (Purtee et al., 2010). Another type of case study, the unfolding case study, is a scenario that progresses over time. This type of scenario allows students to reason and to make judgments before knowing all the facts, which is more realistic (West et al., 2011). A third type of case study, mini cases, are “small, carefully selected clusters of information that invite students to analyze a set of facts or circumstances, offer interpretations, form judgments and make decisions using concepts in the discipline” (IETL, 2006, p. 21). This form of case studies is often used in conjunction with lecture and introduces or reiterates lecture topics (IETL, 2006). Virtual case studies consist of traditional case studies infused with computer imagery (Heinrich et al., 2012). Case studies can also be paired with high fidelity simulation technology to emulate real-life scenarios in real time (Raurell-Torreda et al., 2014).

#### **Advantages of case studies.**

*For students.* Case studies have many cognitive and social benefits for students. Cognitively, students who participated in this learning strategy have shown improved independent performance and grades (Baumberger-Henry, 2005; Kantar, 2014; Ohman, 2010; Raurell-Torreda et al., 2014; West et al., 2011), increased knowledge content and retention (Heinrich et al., 2012; Popil, 2010), and better critical thinking skills (Popil, 2010; Raurell-

Torreda et al., 2014). They also have improved their clinical judgment (Rowles & Russo, 2009) and problem-solving skills (Popil, 2010; Tomey, 2003; West et al., 2011). Oftentimes, the active learning strategy of case studies leads to learning beyond the specific case through group discussion and investigation (Purtee et al., 2010). Besides the advantages of using active learning, learners also demonstrate enhanced understanding of nursing care (Sandstrom, 2006), better clinical grades (Hoke & Robbins, 2005), and more confidence in course material (Ohman, 2010). When case studies are presented and implemented through small groups, social advantages amplify. Students learn to communicate, to cooperate, and to problem solve with each other (Kantar, 2014; Raurell-Torreda et al., 2014). Also, learners appreciate other viewpoints (Kantar, 2014) and examine human intentions, feelings, and misinterpretations in colleagues and in patients (Popil, 2010).

Similarly, using case-based learning has professional and personal advantages for students. Professionally, students learn to connect nursing theory to nursing practice (Popil, 2010; Purtee et al., 2010; Raurell-Torreda et al., 2014; West et al., 2011). Moreover, students who used case studies in simulation format have shown more preparation for clinical practice and enhanced patient assessment skills (Raurell-Torreda et al., 2014). Popil (2010) also reported that using case studies provided clinical experiences that the nursing student may not experience in school and allows educators to model expert critical thinking and professional behavior. Personally, students have enjoyed using case studies (Heinrich et al., 2012). Furthermore, learners can practice providing nursing care without the emotional or legal ramifications of poor decisions that lead to poor patient outcomes (Heinrich et al., 2012; Purtee et al., 2010). Individually, students have developed their accountability (Baumberger-Henry, 2005) and their autonomy (Raurell-Torreda et al., 2014). They also have augmented their goal-setting skills

(Kantar, 2014), their motivation and interest in learning (Ohman, 2010; Raurell-Torreda et al., 2014), and their self-regulation (Kantar, 2014). Case studies also emotionally prepare nursing students for the real world (Popil, 2010).

***For educators.*** Educators have reported some benefits in incorporating case studies into their classroom. Faculty have reported renewed interest and increased enthusiasm for course materials. Using case studies have made teachers reevaluate their teaching practice and have brought innovation and freshness to the classroom (Popil, 2010). West et al. (2011) found that utilizing this learning strategy added meaning and relevance to their classroom. Furthermore, clinical facilities have perceived nursing students to be more prepared for clinical practice and more capable of critical thinking (West et al., 2011).

#### **Disadvantages of case studies.**

***For students.*** As with all active learning strategies, case studies also have challenges to consider. Students are more familiar with traditional pedagogy with little input or preparation from them (Scheckel, 2012). Case studies compel students to actively engage in their learning and to prepare before coming to class (Popil, 2010). This change may frustrate or overwhelm students, especially those who are less prepared, who have poor time management skills, or who procrastinate (Popil, 2010; West et al., 2011). Gaining student acceptance, reassuring students about the benefits of active learning, and assisting students with time management can help overcome these disadvantages (Fahlberg et al., 2014; Scheckel, 2012). Some case studies can be too complex for the level of the student; educators must evaluate if case studies are the appropriate rigor for the level of the student's expertise (West et al., 2011). In addition, preparing and completing case studies can be time consuming for students. Educators need to

focus on rich scenarios that fulfill learning objectives and that foster critical thinking and not overload the course with case studies (West et al., 2011).

***For educators.*** For educators, disadvantages of case studies can impede successful implementation of this activity. The use of case studies is not appropriate for rote memorization and total recall of concrete facts. Teachers need to design case studies that help higher level thinking, such as application, analysis, synthesis, and evaluation (Popil, 2010). Case studies can also be time consuming and difficult for faculty to develop (Popil, 2010; Purtee et al., 2010). Some educators overcome this obstacle through using predesigned case studies (Purtee et al., 2010). Faculty also must have good questioning skills to successfully implement case studies (Popil, 2010; Purtee et al., 2010). Lastly, educators must overcome student reluctance to this new method of learning (West et al., 2011). Garnering support of administration and peers, as well as the students, can decrease this resistance (Fahlberg et al., 2014; Scheckel, 2012).

**Collaborative learning.** Collaborative learning can be labeled as cooperative learning, team-based learning, peer learning, and group learning (Baghcheghi et al., 2011). Regardless of the name, this active learning strategy occurs when groups of students (usually small groups of three to five students) each equally contribute to produce an assignment or to solve a problem (Baghcheghi et al., 2011; Lin, 2011; Scheckel, 2012; Stiles, 2006). Within this group context, members of the group contribute to each other's learning (Baumberger-Henry, 2005). Cooperative learning determines that the success of the group is based on equal participation of each member, and each student is accountable for his or her involvement (Lin, 2011). The learning goals of this method include higher level thinking, improved interpersonal skills, and increased content knowledge (Baghcheghi et al., 2011).

Collaborative learning is founded in group formation. In order to produce best results and most effective learning, educators must build heterogeneous groups. Dividing the groups into varying academic levels, healthcare experience, and gender promotes student learning (Baghcheghi et al., 2011; Fahlberg et al., 2014; Lin, 2011; Purtee et al., 2010). Johnson and Johnson (1992) argued that effective cooperative groups have five vital elements. First, the group must have positive interdependence among the group members. Second, each member develops and uses interpersonal and small group skills. The third element is timely and relevant group feedback. Fourth, group members have face-to-face interaction. Last, each individual is accountable for their contribution to the group (Johnson & Johnson, 1992).

Collaborative learning, a way to develop student's skill acquisition, cognition, and metacognition (Lin, 2011), has many uses and requires several skills for successful implementation. It integrates active learning in the classroom (Baghcheghi et al., 2011), makes instruction relevant, and requires students to be more responsible for their learning (Panitz, 1999). It also helps students build critical thinking, which allows them to easily transfer knowledge to their nursing practice (Baghcheghi et al., 2011). Faculty must develop several skills to use this learning strategy: team-building skills, group facilitation, and good questioning skills (Fahlberg et al., 2014). Within these groups, students will learn to negotiate, to resolve conflict, to reach a group consensus, and to actively listen (Lin, 2011). To successfully execute collaborative learning, both faculty and students should exercise mutual support, discussion of challenges, and problem-solving skills (Fahlberg et al., 2014).

To facilitate collaborative learning, educators must complete four steps. First, the instructor must decide how the groups will be formed, what size the groups will be, what resources the groups will have available to them, and what tasks are to be completed. Second,

the teacher will explain the roles and responsibilities to the groups. Third, the educator will monitor group dynamics and intervene if necessary. Finally, the faculty will evaluate group work, noting individual roles and performance within the group and what learning was achieved (Ohman, 2010).

***Advantages of collaborative learning.***

*For students.* Collaborative learning has been demonstrated to have several advantages. Intellectually, students who participate in collaborative learning have developed higher level reasoning (Caputi, 2010; Kantar, 2014; Lin, 2011; Ohman, 2010) and increased their critical thinking (Andersen et al., 2011; Lin, 2011; Scheckel, 2012) and decision making skills (Caputi, 2010). They also improved their ability to cope with ambiguity in practice (Andersen et al., 2011) and have earned higher grades (Andersen et al., 2011; Baghcheghi et al., 2011; Ohman, 2010). Students were able to discuss issues more intelligently and in a more sophisticated manner (Baghcheghi et al., 2011). Students have also enjoyed social benefits from collaborative learning: increased social, teamwork, leadership, and communication skills; enhanced team discussion; improved skills to negotiate, to manage conflict, and to problem solve; enhanced ability to listen; and decreased number of interruptions (Andersen et al., 2011; Baghcheghi et al., 2011; Caputi, 2010). Likewise, shy students felt more comfortable and contributed more in small groups (Baghcheghi et al., 2011). This method built positive relationships among students (Ohman, 2010; Scheckel, 2012) and encouraged students to recognize different perspectives (Lin, 2011).

In addition, students have enjoyed using collaborative learning (Andersen et al., 2011) When using this method, students have an enhanced preparedness for class, improved productivity during class, decreased attrition, and increased enthusiasm and fun for learning

(Andersen et al., 2011; Caputi, 2010; Ohman, 2010). Collaborative learning also boosted academically weaker students' rates of success (Andersen et al., 2011). Professionally, students have improved their communication skills with patients (Baghcheghi et al., 2011). When faculty designed collaborative learning activities, they reduced reading workloads to pertinent and manageable portions (Andersen et al., 2011). Collaborative learning develops student creativity and enhances peer teaching. Finally, this method also stimulates discussion (Baghcheghi et al., 2011) and promotes individual accountability (Andersen et al., 2011) and healthier psychological adjustment (Ohman, 2010; Scheckel, 2012).

*For educators.* Educators noticed several benefits for themselves when employing collaborative learning. Students attended more regularly and slept less often in class. Teachers also reported increased satisfaction and more enjoyment in teaching (Andersen et al., 2011). With this method, their interest in discovering and using other active learning strategies grew (Fahlberg et al., 2014). Faculty also became more selective on assigned reading and increased their own preparation for class improving their knowledge (Andersen et al., 2011). Lastly, student evaluations scored the teachers and the courses much higher than the traditional class (Andersen et al., 2011).

#### ***Disadvantages of collaborative learning.***

*For students.* Students can encounter some negative aspects of collaborative learning. Students are not used to active participation in their learning (Scheckel, 2012), which requires a higher cognitive demand (Anthony, 1996). Students must have an appropriate attitude when participating in collaborative learning. They must be willing to try new learning techniques, be a team player, and contribute equally to the group assignments (Anthony, 1996; Baghcheghi et al., 2011). Also, students must come to class prepared, and this preparation can be time consuming

(Fahlberg et al., 2014). In addition, some students do not enjoy working together, because often everyone receives the same grade regardless of each group member's contribution (Lin, 2011). Often, when using collaborative learning (as in nursing practice), questions do not have definitive answers, and students are uncomfortable with this ambiguity (Andersen et al., 2011). Although shy students showed more participation in small groups than in the large classroom, some of these students still do not work well this way (Baghcheghi et al., 2011).

*For educators.* Educators will also encounter many difficulties when planning and implementing this active learning strategy. First, planning cooperative learning requires a great deal of work and preparation, which is very time consuming compared to traditional pedagogy. When executing collaborative learning in the course, classes may not logically flow in sequential order, and educators may have to handle the ambiguity that can occur in nursing practice. Similarly, the amount of content covered in the class is decreased, because this learning strategy takes more time to complete. Likewise, if using technology (i.e., discussion boards, PowerPoint, Internet), educators and students alike may experience technical difficulties (Andersen et al., 2011).

Faculty will also encounter challenges that originate from the students. Students may resist actively participating or openly confront or challenge the teacher (Andersen et al., 2011; Ohman, 2010). Some students may dislike doing group assignments, because they have been burdened before with slacking members. Forming predetermined heterogeneous groups can cause friction between students and faculty, because students want to be grouped with their friends (Andersen et al., 2011). Larger classes are harder to manage when using collaborative learning and require educators to have excellent group management skills (Andersen et al., 2011;

Fahlberg et al., 2014). Unfortunately, even with all the advantages of collaborative learning, it does not guarantee deeper learning or improved knowledge construction (Andersen et al., 2011).

Educators need to design and implement collaborative activities with all these challenges in mind. The grading of group work should include a peer evaluation, where students enumerate each other's roles and evaluate each other's work that contributed to the final product (Andersen et al., 2011; Fahlberg et al., 2014). Collaborating with students to establish peer evaluation criteria reassures students of fair grading practices (Andersen et al., 2011). Andersen et al. (2011) also suggested including an appeals process where students can appeal group quizzes and project grades using evidence-based rationales to argue their position. Stating clear and specific expectations of groups and of each individual can ameliorate several challenges and puts students at ease (Fahlberg et al., 2014). An orientation day or other preparation for students is needed before introducing this new teaching method (Andersen et al., 2011; Fahlberg et al., 2014). This time can be used to garner student support, to outline expectations of students, and to show the benefits of using collaborative learning (Fahlberg et al., 2014).

### **Active Learning in the Online Learning Format**

The online platform can enrich these active learning strategies. Online format is more than a way to print lecture notes (Boswell & Cannon, 2010). It provides a way to extend learning beyond the classroom and to enhance active learning (Caputi, 2010). Educators have to change the way they view teaching: becoming a facilitator of learning and not a transmitter of learning (Scheckel, 2012). Using an online format for active learning allows a more flexible, prompt, and accessible learning environment (Lin, 2011). Most active learning activities can be transferred to the online format (Ohman, 2010).

Today, students expect some integration of technology in their instruction (Boswell & Cannon, 2010). In addition, incorporating multiple forms of technology is gaining acceptance in faculty and administration (Lin, 2011). So far, the most effective method is to integrate technology into face-to-face classrooms (also known as blended learning) (Alseweed, 2013; Lin, 2011; Melton et al., 2009; U.S. Department of Education, 2009). With the overwhelming advantages of both active learning and online learning, educators need to incorporate these types of learning into their classroom.

### **Summary**

Active learning has many uses and forms that educators can choose to enhance their class. Integrating these active learning strategies can have many advantages, especially improved learning. Although several challenges exist, most disadvantages can be alleviated or avoided with good planning and orientation days or sessions. Both active learning strategies of case studies and collaborative learning can be implemented online and demonstrate many benefits for students and educators. Since these learning strategies can be easily adapted to the online or blended environment, case studies and collaborative learning will be used for this study.

### **Summary**

Active learning and blended learning are complementary to each other. In fact, to be successful, blended learning is dependent on the use of active learning strategies. Both students and educators benefit with the use of this learning style and delivery. One of the biggest advantages of using active learning strategies in the blended learning environment is the improvement of student learning and achievement. Validating these findings can benefit all students and improve course design and delivery.

Using active learning in the flexible environment of online learning could help improve the achievement of nursing students. Unfortunately, the paucity of research on this topic prevents the verification of this possibility at this time. This research study will help to fill this gap in research by evaluating the effectiveness of online learning combined with active learning strategies on nursing students' academic achievement. Assessing their achievement and satisfaction with this learning style and delivery can provide educators with evidence-based teaching and help them make decisions during course planning and delivery.

## CHAPTER III

### METHODS

The purpose of this study was to explore the effectiveness of scaffolding case studies in the blended learning environment versus traditional pedagogy on student achievement. The methodology of this research study was developed to address the research questions discussed in Chapter I. This study's methodology will be discussed in detail in this chapter. This chapter is divided into the following sections: research questions, setting, participants, study design, instrumentation, data collection, and data analysis.

#### **Research Questions**

As mentioned in Chapter I, this study answered the following research questions:

1. Is there a difference in nursing students' academic achievement after they are introduced to scaffolding case studies in a blended learning environment?
2. Is there a difference in students' academic achievement from the course that used only traditional pedagogy versus the course that implemented the scaffolding case studies?

#### **Setting**

The setting of this study is in a rural West Alabama community college. Southeastern Community College (SCC) "is an accredited, learning-centered institution dedicated to student success, by providing quality education and training opportunities that enrich lives intellectually, economically, and culturally" (SCC, 2011, p. 1). SCC values diversity, excellence, integrity, and accountability. Their goals as an educational institution include improving access to students,

maximizing student success, improving services for students and the surrounding community, utilizing resources optimally, and expanding educational opportunities (SCC, 2011).

SCC has many campuses across rural west Alabama. This study focused on one of those campuses. The selected campus of SCC offers a two-year associate degree nursing program and a one-year licensed practical nursing program. Participants were recruited from the Fundamentals of Nursing (NUR 102) course at one of these campuses.

NUR 102 is the first clinical nursing course that the associate degree registered nursing (ADN) students encounter. In their first semester of nursing school, all ADN students have to enroll and pass this course. NUR 102 is only available to nursing students who have been accepted into the nursing program. Students are required to take Principles of Biology I before enrolling in NUR 102. This course is also taken concurrently with Health Assessment and Pharmacology. If the nursing student has not taken all non-nursing courses, they may also concurrently take Human Anatomy and Physiology or Pre-Algebra. In this course, students are introduced to nursing topics, such as the nursing process, patient safety, mobility, vital signs, ethics and values, legal implications, managing patient care, infection control, medication administration, sleep, pain management, patient education, documentation and informatics, therapeutic communication, critical thinking, bowel elimination, health and wellness, caring, culture and diversity, urinary elimination, skin integrity and wound care, sexuality, oxygenation, nutrition, gerontology, loss, grief, dying, stress, spiritual health, and fluid and electrolyte balance.

NUR 102 has the following description included in the syllabus and course catalog:

This course provides opportunities to develop competencies necessary to meet the needs of individuals throughout the lifespan in a safe, legal, and ethical manner using the nursing process. Students learn concepts and theories basic to the art and science of nursing. The role of the nurse as a member of the healthcare team is emphasized. Students are introduced to the concepts of client needs, safety, communication, teaching/learning, critical thinking, ethical-legal.,

cultural diversity, nursing history, and the programs' philosophy of nursing. Additionally, this course introduces psychomotor nursing skills needed to assist individuals in meeting basic human needs. Skills necessary for maintaining microbial, psychical, and psychological safety are introduced along with skills needed in therapeutic interventions. At the conclusion of this course students demonstrate competency in performing basic nursing skills for individuals with common health alterations. (Alabama Community College System, 2008, p. 2)

This course has a classroom component (3 hour credit), clinical component (1 hour credit), and laboratory component (2 hour credit). The students are required to pass all three components to pass the class. The classroom portion is on a ten point scale, but the failing grade in this course is all scores below a 74.5. The clinical and laboratory components are on a pass/fail grading system. The clinical instructor and the laboratory instructor determine the pass/fail grade of their respective component. The NUR 102 classroom portion meets once a week for three hours for fourteen weeks. In this course, the students have to also complete 45 hours of clinical time (which includes working with patients at a long term care unit and simulation) and 90 hours of laboratory time (which consists of demonstration of nursing technical skills). Classroom instruction contains only lecture using PowerPoint. Currently, the course management system (Canvas) for this class is used to disseminate grades and PowerPoint presentations.

The following learning objectives are written in the course syllabus for the overall course:

1. Promote safe and secure environment.
2. Provide care for clients with selected integumentary system alterations.
3. Assist clients with activities of daily living.
4. Assess vital signs.
5. Use therapeutic communication skills.

6. Demonstrate professional behaviors.
7. Provide needs-based care according to Maslow's hierarchy.
8. Utilize the nursing process and critical thinking skills.
9. Manage comfort, pain, sleep, and rest.
10. Provide for nutrition/fluid balance.
11. Maintain oxygenation.
12. Promote, maintain, and restore elimination.
13. Explain issues associated with the aging process.

Each learning objective has seven to nineteen lesson objectives.

Currently, this course has the highest enrollment and the highest attrition in this nursing program. Recruiting from this course ensured an adequate sample size needed for this study.

Due to these factors, this setting was ideal for this study.

### **Participants**

Research participants were recruited from the Fundamentals of Nursing (NUR 102) course at SCC at the selected campus. Students who were enrolled and attended the class were asked to participate in this study. Although everyone in the class had to complete the scaffolding case study activity (because it was part of their grade in that course), they were not required to participate in the study. Additionally, they were not be penalized in any way for not participating in the study. Students had the option to opt out initially and at any point during the study. At the time of this study, 60 students were enrolled in Fundamentals of Nursing course. Out of the 60 enrolled students, 54 agreed to participate in the research study and signed the informed consent. Due to attrition in the course, 43 students completed all of the case studies and the post tests. From these students, the data was analyzed to evaluate for effectiveness of the

intervention. All of these students experienced the instruction of the same educator in the same lecture-type setting. For this study, the researcher was not the instructor.

To further enrich the study, the researcher compared the previous semester's grades (Fall 2014) enrolled in the Fundamentals course. This class only had traditional pedagogy and did not contain any case studies or collaborative learning. This nonintervention group (and their test scores) was used as a control group to compare the experimental group's test scores.

### **Study Design**

For this study, the researcher chose a quasi-experimental design. "In a quasi-experiments, the investigator uses control and experimental groups but does not randomly assign participants to groups" (Creswell, 2014, p. 170). The researcher used a convenience sample. A pure experimental design was not chosen due to the potential of some students benefiting from the intervention and the control group suffering from not receiving the intervention. In the chosen quasi-experimental design, every nursing student in the class (regardless of participation in the study) received the intervention and thus, the potential advantages of the intervention. This study sought to explore the effectiveness of collaborative scaffolding case studies in the blended learning environment versus traditional pedagogy on student achievement. The two parts of this study will be briefly described below.

### **Instructor and Researcher's Roles**

**Instructor's role.** Due to ethical concerns and the structure of the institution, this study had two different roles. Two different individuals fulfilled these two roles. The NUR 102 instructor served only as the instructor of the course. The instructor was responsible for teaching the six modules used in this course. The instructor generally used lecture-based learning strategies utilizing PowerPoint presentation for all the content of the course. For the study, the

instructor taught three modules using her typical lecture-based methods and three modules using lecture and the scaffolding case studies (intervention) designed by the researcher. The instructor taught and graded the intervention activity utilizing a rubric. The instructor also masked the identity of the participants when she disseminated their test grades through randomized numbering. The instructor was responsible for the management of the class and creation of the tests (discussed in instrumentation).

The instructor has taught this course for the last four years. The instructor also teaches Introduction to Pharmacology (NUR 104), a co-requisite course of NUR 102, and Nursing through the Lifespan I (NUR 201), a course taught in third semester of ADN students. The instructor has 20 years of experience as a nurse: 10 years in clinical areas (intensive care unit, hospice, and medical-surgical floor), 6 years in management (director), and 4 years in education (ADN/LPN instructor). The instructor's education includes a bachelor's of science in nursing and master's of science in nursing (in case management). Since hired, this instructor has taught NUR 102.

**Researcher's role.** In this study, the researcher designed all parts of the study. The researcher did not teach any portion of NUR 102. To obtain informed consent, the researcher explained the study and recruited potential participants in class. The researcher uploaded the case studies on the participants' course management system (Canvas) and answered all questions about the case studies. After all student grades were reported to SCC, the instructor gave the researcher all the data (test grades under randomized numbers rather than participants' names). The researcher then analyzed the data.

## **Part I: Recruitment**

Participants were recruited on a lecture day in of the Fundamentals of Nursing (NUR102) course after the second exam. On that day, the researcher described the study and answered any questions the students had. The researcher emphasized that although everyone had to complete the scaffolding case studies as part of requirement to complete NUR 102, they were not required to participate in this study. Also, the researcher ensured that everyone understood that participation was voluntary and anyone could decide to opt out at any point in this study. Whether or not the students participated in the study did not affect their grades. Each participant read and signed an informed consent (see Appendix A). After the informed consent was signed, the researcher passed out a demographic sheet (Appendix B) for participants to complete, which allowed the researcher to identify characteristics of the participant sample.

## **Part II: Implementation of Scaffolding Case Studies**

After the first day of class, the nursing instructor created randomized groups of five students for collaborative work on the case studies. These groups are a part of the intervention (collaborative learning portion) and not part of the research methodology. Students were notified of the members of their groups online. For the first and second module, participants received their instruction in the traditional classroom. The instructor lectured and used her created PowerPoint presentations to cover the content. Then the participants completed the module one test and module two test, respectively.

For the third module, the instructor still taught participants using lecture-based teaching strategies, but the researcher also posted the case study for module three (see Appendix C) for participants to complete. The case study for module three was due the Friday before the module three test. Each participant turned in his/her case study on the course management system. The

instructor graded these case studies using a rubric. The case studies were not included in the data collection, but were part of the routine activity of the class. Grades were posted within the first week after assignment submission.

For the fourth module, the instructor taught participants the content of this module using lecture-based PowerPoint presentations. No case study was used for this module. After the participants completed the module four test, the researcher posted the module five case study.

For module five content, the instructor continued to teach participants using traditional pedagogy (lecture-based, face-to-face learning strategies), but the researcher posted the case study for module five (see Appendix D) for participants to complete. This case study was due the Friday before the module five test. Again, the instructor graded this case study based on a rubric (the same rubric as the one used in module three).

After participants completed the module five test, the instructor taught module six using traditional pedagogy and posted the last case study (module six) (see Appendix E). Again, this case study was due the Friday before their module six test and was graded using the same rubric that was used for modules three and five case studies. After the instructor reported the participants' grades to SCC, she gave the researcher the grades of all six post-tests, masking the identities of the participants through randomized numbers. Table 1 will assist in differentiating between the control and experimental modules.

Currently, a course management system (Canvas) is in place, but it is only used to communicate to the teacher, to disseminate grades, and to retrieve PowerPoint presentations for lecture. The researcher used Canvas to deliver the experimental intervention. The participants also used Canvas to submit their work on the assignment and received their grades on those assignments.

Table 1

*The Control and Experimental Modules*

	<b>Control</b>	<b>Experimental</b>
<b>Module 1</b>	X	
<b>Module 2</b>	X	
<b>Module 3</b>		X
<b>Module 4</b>	X	
<b>Module 5</b>		X
<b>Module 6</b>		X

**Intervention**

The intervention for this study is an active learning strategy (scaffolding case studies using collaborative groups) that was posted online. The participants received three interventions for half of their modules for the first semester. They still received lecture-based teaching for every module and were taught by the same instructor every time. The researcher wrote and designed these case studies (Appendices C, D, and E). An expert panel of six Fundamentals of Nursing instructors gave suggestions for modification and improvement.

The constructivist essential points are incorporated in the questions that the students first answer individually in the intervention. The first two essential points are knowledge is constructed and not transmitted (Piaget, 1952) and reflection on prior experience and knowledge is critical to know how to assimilate or accommodate new knowledge (Piaget, 1952). From these two elements, the researcher wrote the following three questions:

1. What information/knowledge do you currently have that pertains to the case study?

Use any media/method (i.e., concept maps, lists, flowcharts, tables, logarithms, outline, infographic) you choose to show this information.

2. What information do you need to know to further this patient's care? What questions do you want to ask?

3. What specific resources, besides lecture notes and textbooks, can you use to help you solve this problem? If possible, use these additional resources to answer your questions generated from question number 2 and to the following group questions.

These three questions allow the participants to reflect on their current knowledge and construct their own knowledge using their past experiences and different resources available to them. The third essential element in constructivism is to scaffold content to ensure optimal learner development and understanding of the content (Pritchard, 2005). The scaffolding is incorporated in the three case studies; the case studies have the same patient that progressively gets worse and are designed with more complex data than the previous case study. The fourth essential element, social interaction is vital for knowledge development (Bruner, 1966; Vygotsky, 1978) and is incorporated into the case study when students have to answer questions in a group after answering the first set of questions individually. All participants are randomly divided into small groups of 3-5 people. In these groups, the participants answered the following questions:

1. What do you need to do next to care for this patient?
2. What have you learned from this patient? Integrating what you learned in class and from your resources, what nursing interventions can you implement to improve this patient's care?

The last question also makes participants think about how they thought. This metacognitive activity addresses another element of constructivism: reflection on how the process of learning occurred is essential for future construction of knowledge (Pritchard, 2006). Lastly, case studies are authentic tasks in a situated context. This aspect of case studies included the constructivist element of authentic tasks that provided a place for the students to learn in situated contexts (Edelson & Reiser, 2006).

The researcher wrote all three case studies and an expert panel of Fundamentals of Nursing instructors reviewed and modified the case studies. The first case study (see Appendix C) describes a common patient that the students could encounter in the hospital. This case study covers nursing topics of managing patient care, infection prevention and control, sleep, and pain management. The second case study (see Appendix D) is the same patient as the first case study, but with more complex data and health issues and management. This case study includes topics about skin integrity and wound care, oxygenation, and nutrition. The last case study (see Appendix E) also describes the same patient as the first two case studies, but she has progressively gotten worse. Also, in this case study, the participants must address the health and well-being of not just the patient but also the patient's family. The third case study covers the topics of loss, grief, dying, stress, and coping.

### **Instrumentation**

In order to measure nursing students' academic achievement, all participants completed a post-test in each module (in both the control and the experimental modules). Each post-test was a fifty multiple-choice question test on the content of the Fundamentals of Nursing course and contained an even division of material covered in the experimental portion and in the control portion of the class. These questions were designed and derived from the participants'

Fundamentals of Nursing textbook, *Fundamentals of Nursing* (Potter, Perry, Stockert, & Hall, 2013). These test questions have been used in previous semesters and in many nursing programs in the United States to measure students' nursing knowledge and application of this knowledge. This extensive use of these test questions improves the reliability and validity of these tests. Each individual question was analyzed for the amount that is answered correctly through the Par Score program. Any question that had a noticeable discrepancy was analyzed and assessed as to whether to count the question, take two answers for the question, or not count the question at all. The instructor made this decision for each question on every test.

### **Data Collection**

The nursing instructor administered each post-test in the classroom. She was present at all testing times to prevent academic dishonesty. In addition, she collected all of the participants' tests and graded them to measure their academic achievement. After all final grades were submitted to SCC, she then assigned each participant a random number and gave the researcher the results of all six tests under that assigned random number (instead of the participants' names). Also, the instructor removed all identifying information from the previous semester's (Fall 2014) student grades and gave the researcher the results of those six tests.

### **Data Analysis**

This quasi-experimental study evaluated the student academic achievement (dependent variable) when the participants experienced scaffolding case studies in blended learning versus traditional learning (independent variable). For the dependent variable, the researcher analyzed the data of the three intervention modules with the three traditional pedagogy modules using the ANOVA repeated measures with covariant. The covariant was the traditional pedagogy modules and was used as a control. This test accepted or rejected the following null hypothesis:

1. There is no difference in nursing students' academic achievement after they are introduced to scaffolding case studies in a blended learning environment.

The second type of analysis compared the intervention participants (Fall 2015) and the control group (Fall 2014) who did not receive an intervention. The researcher used MANOVA to analyze and compare both groups' test scores. This test allowed the researcher to either reject or accept the following null hypothesis:

2. There is no difference in students' academic achievement from the course that used only traditional pedagogy versus the course that implemented the scaffolding case studies

## CHAPTER IV

### RESULTS

The purpose of this study was to explore the effectiveness of scaffolding case studies in the blended learning environment versus the traditional pedagogy on student academic achievement. First, this chapter will delineate the description of the participants of the study. Second, the results of each research question will be presented. Last, these results will be summarized.

#### **Description of Participants**

In the experimental group (associate degree nursing students enrolled in NUR 102: Fundamentals of Nursing in fall semester of 2015), 54 out of 60 students chose to participate in the research study. From the 54 participants, only 43 students completed all three case studies (interventions) and all six exams (instruments). Therefore, this study had a 90% participation rate. Due to attrition, only 71.6% of participants were included in the research data. The remaining 43 participants completed a questionnaire to analyze their demographics (see Appendix B for demographics questionnaire). Demographic information is presented in Table 2.

#### **Academic Average**

The first question asked the participants their current academic average. As noted in Table 2, 27 participants (62.8%) currently had a B average with 15 (34.9%) having a C average and 1 (2.3%) with an A average. Those with a D average or below may not have been represented in the data because those participants were more likely to drop the class and not complete all the case studies or all the exams.

Table 2

*Demographics of Study Participants*

<b>Demographic</b>	<b>Categories</b>	<b>Participants</b>	<b>Percentage</b>
Academic Average	A	1	2.3%
	B	27	62.8%
	C	15	34.9%
	< D	0	0.0%
Experience in Healthcare Setting	None	26	60.4%
	< 2 years	13	30.2%
	3-10 years	3	7.0%
	11-20 years	1	2.3%
	20 or more years	0	0.0%
Gender	Female	37	86.0%
	Male	5	11.6%
	Transgender	0	0.0%
	Prefer Not to Respond	1	2.3%
Race/Ethnicity	African American/ Black	7	16.2%
	Asian/ Pacific Islander	0	0.0%
	Caucasian/ White	34	79.1%
	Hispanic/ Latino	0	0.0%
	Native American/American Indian	0	0.0%
	Multiracial	2	4.7%
	Not Listed	0	0.0%
	Prefer Not to Respond	0	0.0%
Age	<18	0	
	18-24	29	67.4%
	25-30	11	25.6%
	31-40	2	4.7%
	41-50	1	2.3%
	>50	0	0.0%
Hours Work Per Week for Pay	None	15	34.8%
	1-5	3	7.0%
	5-10	1	2.3%
	11-20	9	20.9%
	21-30	9	20.9%
	31-40	6	14.1%

**Healthcare Setting Experience**

The second question of the questionnaire asked, “How much experience do you have in the healthcare setting?” Options for answers to this question included none, 0-2 years, 3-10 years, 11-20 years, and over 20 years’ experience. From participants’ answers (see Table 2), 26

participants (60.4%) had no previous experience and 13 participants (30.2%) had 2 or fewer years of healthcare experience. Participants with 3-10 year experience, 11-20 years' experience, and over 20 years' experience were 3 (7.0%), 1 (2.3%), and 0 (0%), respectively.

### **Gender**

The third demographic surveyed was gender. This question had the options of male, female, transgender, and prefer not to respond. Similarly to the nursing profession population, participants were predominantly female [37 participants (86.0%)] with 5 participants (11.6%) being male, 0 (0%) transgender, and 1 participant (2.3%) who did not respond.

### **Race/Ethnicity**

The fourth question asked the students to identify their race/ethnicity. Although a multitude of racial/ethnic identities were listed, only three answers were marked: Caucasian/ White [34 participants (79.1%)], African American/ Black [7 participants (16.2%)], and Multiracial [2 participants (4.7%)]. Table 2 identifies all the possible options for this question.

### **Age**

The next question addressed the participants' ages. Most of the participants [29 total (67.4%)] were between the ages of 18 and 24. Eleven participants (25.6%) were between the ages of 25 and 30 years old. Two participants (4.7%) were between 31 and 40 years old and one (2.3%) was between 40 and 51 years old.

### **Hours Worked in Week for Pay**

Last, participants were asked, "How many hours a week do you work for pay?" The results of this question were more evenly divided than the other demographics. As shown in Table 2, 15 participants (34.8%) did not work at all, 3 participants (7.0%) worked 1-5 hours a week, 1 participant (2.3%) worked 5-10 hours a week, 9 participants (20.9%) worked 11-20

hours a week, 9 participants (20.9%) worked 21-30 hours a week, and 6 participants (14.1%) worked 31-40 hours a week.

### **Results of Data Analysis**

The following research questions guided this study:

1. Is there a difference in nursing students' academic achievement after they are introduced to scaffolding case studies in a blended learning environment?
2. Is there a difference in students' academic achievement from the course that used only traditional pedagogy versus the course that implemented the scaffolding case studies?

Therefore, the null hypotheses are:

1. There is no difference in nursing students' academic achievement after they are introduced to scaffolding case studies in a blended learning environment.
2. There is no difference in students' academic achievement from the course that used only traditional pedagogy versus the course that implemented the scaffolding case studies.

### **Research Question 1**

Is there a difference in nursing students' academic achievement after they are introduced to scaffolding case studies in a blended learning environment? Using ANOVA repeated measures with covariance, all six tests were compared to each other to identify significant differences. The comparison passed Mauchly's Test of Sphericity (see Table 3). "Sphericity refers to the equality of variances of the differences between measurements, which is an assumption of ANOVA with a repeated measures factor" (Repeated measures analysis of variance, 2016).

Table 3

*Mauchly's Test of Sphericity<sup>a</sup>*

Within Subjects Effect	Mauchly's W	Approx. Chi-Square	df	Sig.	Epsilon <sup>b</sup>		
					Greenhouse-Geisser	Huynh-Feldt	Lower-bound
Test	.669	15.321	14	.358	.847	.960	.200

As shown in Table 4, no significant difference was seen between the different measurements.

Table 4

*Tests of Within-Subjects Effects*

Source		Type III Sum of Squares	df	Mean Square	F	Sig.
Test	Sphericity Assumed	222.099	5	44.420	1.920	.092
	Greenhouse-Geisser	222.099	4.236	52.434	1.920	.105
	Huynh-Feldt	222.099	4.800	46.271	1.920	.096
	Lower-bound	222.099	1.000	222.099	1.920	.174
Error(test)	Sphericity Assumed	4626.502	200	23.133		
	Greenhouse-Geisser	4626.502	169.432	27.306		
	Huynh-Feldt	4626.502	192.000	24.096		
	Lower-bound	4626.502	40.000	115.663		

Also in Table 5, the pairwise comparisons showed no significant differences between all six tests for the participants that completed the case studies.

Table 5

*Pairwise Comparisons*

(I) test	(J) test	Mean Difference (I-J)	Std. Error	Sig. <sup>a</sup>	95% Confidence Interval for Difference <sup>a</sup>	
					Lower Bound	Upper Bound
1	2	1.257	1.126	1.000	-2.258	4.771
	3	-1.032	1.011	1.000	-4.187	2.124
	4	-.787	1.172	1.000	-4.446	2.872
	5	.826	1.307	1.000	-3.256	4.908
	6	1.388	1.289	1.000	-2.637	5.413
2	1	-1.257	1.126	1.000	-4.771	2.258
	3	-2.289	.998	.407	-5.404	.827
	4	-2.043	1.010	.746	-5.196	1.109
	5	-.431	1.010	1.000	-3.583	2.721
	6	.131	.938	1.000	-2.796	3.059
3	1	1.032	1.011	1.000	-2.124	4.187
	2	2.289	.998	.407	-.827	5.404
	4	.245	.859	1.000	-2.437	2.928
	5	1.858	1.106	1.000	-1.596	5.311
	6	2.420	.999	.301	-.699	5.539
4	1	.787	1.172	1.000	-2.872	4.446
	2	2.043	1.010	.746	-1.109	5.196
	3	-.245	.859	1.000	-2.928	2.437
	5	1.613	1.083	1.000	-1.767	4.993
	6	2.175	.939	.387	-.757	5.107
5	1	-.826	1.307	1.000	-4.908	3.256
	2	.431	1.010	1.000	-2.721	3.583
	3	-1.858	1.106	1.000	-5.311	1.596
	4	-1.613	1.083	1.000	-4.993	1.767
	6	.562	.981	1.000	-2.501	3.626
6	1	-1.388	1.289	1.000	-5.413	2.637
	2	-.131	.938	1.000	-3.059	2.796
	3	-2.420	.999	.301	-5.539	.699
	4	-2.175	.939	.387	-5.107	.757
	5	-.562	.981	1.000	-3.626	2.501

Due to the no significant differences between the tests, the null hypothesis for the first research question was not rejected. There was no difference in nursing students' academic achievement after they were introduced to scaffolding case studies in a blended learning environment.

**Research Question 2**

Is there a difference in students' academic achievement from the course that used only traditional pedagogy versus the course that implemented the scaffolding case studies? Using MANOVA analysis, the previous Fundamentals nursing students (Fall 2014) who never used case studies were compared with the Fundamentals nursing students (Fall 2015) who did use the case studies.

Multivariate analysis of variance (MANOVA) is simply an ANOVA with several dependent variables. That is to say, ANOVA tests for the difference in means between two or more groups, while MANOVA tests for the difference in two or more vectors of means. (French, Macedo, Poulsen, Waterson, & Yu, 2002)

Box's test of equality of covariance matrices (see Table 6) tested the hypothesis that the covariance matrices of the dependent variables were equal across the two groups.

Table 6

*Box's Test of Equality of Covariance Matrices*

Box's M	18.066
F	.803
df1	21
df2	26842.243
Sig.	.720

Also, Levene's test of equality of error variances (Table 7) tested the null hypothesis that the error variance of the dependent variable was equal across groups.

Table 7

*Levene's Test of Equality of Error Variances<sup>a</sup>*

	F	df1	df2	Sig.
Test_1	1.151	1	103	.286
Test_2	2.177	1	103	.143
Test_3	.125	1	103	.724
Test_4	.998	1	103	.320
Test_5	1.450	1	103	.231
Test_6	2.697	1	103	.104

Last, the tests of between-subjects effects (Table 8) showed a significant difference in tests 1 ( $p=.009$ ), 2 ( $p=.037$ ), and 3 ( $p=0.00$ ).

Table 8

*Tests of Between-Subjects Effects*

Source	Dependent Variable	Type III Sum of Squares	Df	Mean Square	F	Sig.
Corrected Model	Test_1	294.905 <sup>a</sup>	1	294.905	7.180	.009
	Test_2	143.692 <sup>b</sup>	1	143.692	4.487	.037
	Test_3	667.731 <sup>c</sup>	1	667.731	17.489	.000
	Test_4	25.427 <sup>d</sup>	1	25.427	.598	.441
	Test_5	5.974 <sup>e</sup>	1	5.974	.136	.713
	Test_6	40.338 <sup>f</sup>	1	40.338	.884	.349
Intercept	Test_1	661955.400	1	661955.400	16116.033	.000
	Test_2	633388.905	1	633388.905	19777.420	.000
	Test_3	609821.495	1	609821.495	15972.331	.000
	Test_4	655035.990	1	655035.990	15395.320	.000
	Test_5	617375.496	1	617375.496	14088.736	.000
	Test_6	602493.501	1	602493.501	13201.555	.000

Table 8 (con't)

Source	Dependent Variable	Type III Sum of Squares	Df	Mean Square	F	Sig.
Year	Test_1	294.905	1	294.905	7.180	.009
	Test_2	143.692	1	143.692	4.487	.037
	Test_3	667.731	1	667.731	17.489	.000
	Test_4	25.427	1	25.427	.598	.441
	Test_5	5.974	1	5.974	.136	.713
	Test_6	40.338	1	40.338	.884	.349
Error	Test_1	4230.657	103	41.074		
	Test_2	3298.664	103	32.026		
	Test_3	3932.526	103	38.180		
	Test_4	4382.417	103	42.548		
	Test_5	4513.512	103	43.821		
	Test_6	4700.721	103	45.638		
Total	Test_1	706288.000	105			
	Test_2	673151.512	105			
	Test_3	635904.573	105			
	Test_4	694337.064	105			
	Test_5	652127.342	105			
	Test_6	635333.761	105			
Corrected Total	Test_1	4525.562	104			
	Test_2	3442.356	104			
	Test_3	4600.257	104			
	Test_4	4407.844	104			
	Test_5	4519.486	104			
	Test_6	4741.059	104			

Although a significant difference was seen between tests 1 and 2 (control tests with no intervention), Table 9 shows that the 2014 (control) year was higher than the 2015 year. Thus, only test 3 showed a significant difference between the 2 years that was significantly higher in the intervention group. Test 3 was the first test in which the case study was introduced to the students.

Table 9

*Comparison of 2014 and 2015 Groups*

Dependent Variable	Year	Mean	Std. Error	95% Confidence Interval	
				Lower Bound	Upper Bound
Test_1	2014	83.094	.801	81.505	84.683
	2015	79.659	1.001	77.673	81.644
Test_2	2014	80.800	.707	79.397	82.203
	2015	78.402	.884	76.649	80.155
Test_3	2014	75.521	.772	73.990	77.053
	2015	80.690	.965	78.777	82.604
Test_4	2014	81.454	.815	79.837	83.071
	2015	80.445	1.019	78.425	82.466
Test_5	2014	78.344	.827	76.703	79.985
	2015	78.833	1.034	76.782	80.883
Test_6	2014	77.000	.844	75.325	78.675
	2015	78.270	1.055	76.178	80.363

Therefore, the null hypothesis can partially be rejected. Although there was no significant difference in test 5 and 6 between the two groups, test 3 showed significant improvement in the intervention group. There was a difference in students' academic achievement from the course that used only traditional pedagogy versus the course that implemented the scaffolding case studies, but only one of the three tests showed this difference. Although not statistically significant, it is important to note that the means of the posttests with case studies (test 3, 5, and 6) were higher in the intervention group (Fall 2015) than the control group (Fall 2016). Conversely, the tests without case studies (tests 1, 2, and 4) were higher for the control group than the intervention group. These results could indicate that these students would have done worse if it was not for the intervention and show the possibility of improving academic achievement through scaffolding case studies.

## Case Study Scores Results

Examining the means of the grades for the case studies could explain the results of this study. When averaging the grades, no trend was noted (see Table 10). The grades rose almost a point in the second case study from the first assignment, but dropped two and one-half points in the third case study. This drop in grades may have been due to the timing of the case study (the Friday before final exams), because students may have spent more time studying for the exam than the case study assignment.

Table 10

### *Means of Case Study Grades*

<b>Case Study for Module 3 Grade</b>	<b>Case Study for Module 5 Grade</b>	<b>Case Study for Module 6 Grade</b>
86.17777778	87	84.53333333

### Summary

The results from this research showed that the first null hypothesis was not rejected. There was no difference in nursing students' academic achievement after they were introduced to scaffolding case studies in a blended learning environment. However, the second null hypothesis could be partially rejected. There was a difference in students' academic achievement from the course that used only traditional pedagogy versus the course that implemented the scaffolding case studies in the first test that introduced the case study. Implications of these findings will be discussed in the next chapter.

## CHAPTER V

### DISCUSSION

The purpose of this study is to explore the effectiveness of scaffolding case studies in the blended learning environment versus traditional pedagogy on student achievement. The researcher used a quasi-experimental post-test design and analyzed the data using ANOVA and MANOVA statistical tests. This chapter presents the discussion of the results, limitations of the study, implications for nursing education practice, and recommendations for future research.

#### **Major Findings**

##### **Research Question 1**

Is there a difference in nursing students' academic achievement after they are introduced to scaffolding case studies in a blended learning environment?

Results showed no significant difference in nursing students' academic achievement among the six exams, regardless of the introduction of scaffolding case studies. In this study, the null hypothesis was not rejected for the first research question. There was no difference in nursing students' achievement after they were introduced to scaffolding case studies in a blended learning environment.

Although no research on scaffolding case studies in nursing education was found, the studies in the literature (Baumberger-Henry, 2005; Heinrich et al., 2012; Raurell-Torreda et al., 2014; West et al., 2011) focused on different types of case studies (traditional, unfolding case studies, mini case studies). These studies from the literature on case studies showed improvement in critical thinking skills in nursing students and increased test scores. The results

of the current study contradict the nursing literature found. This contradiction may be due to the disparity among the different types of case studies. This finding may have also happened because the researcher used the blended learning platform to disseminate the case study.

Although the U.S. Department of Education (2009), Alseweed (2013), and Melton et al., (2009) found higher student achievement in a blended learning environment, most studies found that the online format, traditional classroom, and blended learning format had no significant difference in academic achievement (Bata-Jones & Avery, 2004; Buckley, 2003; Coose, 2010; Hsu & Hsieh, 2011a; Leasure et al., 2000). The results of this study showed no significant difference between the tests that implemented the scaffolding case studies online and the tests that only utilized classroom-based lectures. This study supports literature already found on the blended learning environment.

## **Research Question 2**

Is there a difference in students' achievement from the course that used only traditional pedagogy versus the course that implemented the scaffolding case studies?

Results showed that for test three (which is the first test where the scaffolding case study was introduced), there was a significant difference between the course that only used traditional pedagogy (control group) and the course that implemented the scaffolding case study (experimental group). Results also showed that on the first and second tests (both control tests), the control group scored significantly higher than the experimental group. The third test, which introduced the scaffolding case study, was the only test on which the experimental group scored significantly higher than the control group. The last three tests showed no significant difference between the two groups. This discrepancy between test three and the last two tests with case studies (tests five and six) may be due to the first case study explaining the content better and more thoroughly than the last two case studies. It also could be due to the novelty of the case

study being introduced. The introduction of a new teaching technique can motivate students to expend more time and effort in the teaching activity and, thus, improve their knowledge on the content.

When examining the means of the posttests and comparing the control group (Fall 2014) with the intervention group (Fall 2015), the means for the intervention group were consistently higher on the tests for the modules that used case studies. Also, the intervention group's (Fall 2015) test means were without fail lower than the control group (Fall 2014) for the tests that did not use case studies. These results could indicate that the intervention group benefited from the scaffolding case studies in the blended learning environment.

Therefore, the null hypothesis was partially rejected (for the third test) for this research question. In the third test, there was a difference in students' academic achievement from the course that used only traditional pedagogy versus the course that implemented the scaffolding case studies. In the fifth and sixth tests, there was no difference in students' academic achievement from the course that used only traditional pedagogy versus the course that implemented the scaffolding case studies.

### **Discussion**

Implementing and evaluating active learning strategies online is necessary to determine their effectiveness in nursing education. Determining their success or failure can help nursing educators plan educational interventions and improve student learning outcomes (Finke, 2012). Ultimately, knowing what learning strategies work best will allow educators to provide the best learning environments, which give the most optimal learning results (Finke, 2012).

Two learning strategies that are emerging in nursing education are collaborative learning and case studies. Nursing literature has shown collaborative learning to decrease attrition,

enhance student preparedness for classes (Anderson et al., 2011), improve interaction and problem follow-up skills (Baghcheghi et al., 2011), and increase preference for this teaching method after extended exposure to this learning strategy (Sand-Jecklin, 2006). Students who have used case studies, whether virtual or in class, have shown improved content knowledge (Heinrich et al., 2012) and exhibited better patient assessment skills (Raurell-Torreda et al., 2015). When these two active learning strategies were combined, Baumberger-Henry (2005) found that nursing students possessed better self-perception of both problem-solving and decision-making skills. This study did not show improved academic achievement. Other indicators (patient assessment skills, self-perception of problem-solving or decision-making skills) were not measured in this study but could provide insight in future research.

Assessing the learning environment for effectiveness is important as well. Using online and blended learning environments has become the new trend in nursing education (Halstead & Billings, 2012). Several studies (Bata-Jones & Avery, 2004; Buckley, 2003; Coose, 2010; Hsu & Hsieh, 2011a; Leasure et al., 2000) have shown that students perform the same no matter which learning environment (online, blended, or traditional classroom) is used. On the other hand, emerging research (Alseweed, 2013; Melton et al., 2009) shows that blended learning can improve student achievement more than entirely online or entirely in the classroom.

The research questions in this study analyzed whether or not collaborative scaffolding case studies in a blended learning environment improved student achievement. For the most part, the results showed that these learning strategies (collaborative scaffolding case studies) in this learning environment (blended learning) did not improve student achievement. Although these findings contradict most of the research on active learning (Heinrich et al., 2012; Lin,

2011; Raurell-Torreda et al., 2015), Baumberger-Henry (2005) also found no difference in academic achievement when implementing collaborative case studies in her classroom.

The significant difference found between the experimental group (Fundamentals nursing students in Fall 2015) and the control group (Fundamentals nursing students in Fall 2014) on the third test could be caused by many factors. First, the first case study could have been more thorough and covered content on test three better than the case studies for test five and six did. The means of case study grades showed that the second case study had the highest score. Therefore, means of case study grades do not correlate with grades on the tests after the case study. Secondly, the most difficult tests were the last two tests; this difficulty could have affected the scores. Third, the novelty of collaborative scaffolding case studies in a blended format could have improved the scores of experimental group on the third test. With this new learning strategy, they may have put more time and effort into completing the collaborative scaffolding case studies. This extra effort would, therefore, improve their knowledge of the content.

As mentioned in the literature review, DeYoung (2003) recommended five steps: develop learning objectives, adopt a situation, develop character, create discussion questions, and lead group discussion. In this research study, the creation of the case studies used these five steps. The researcher used the already developed learning objectives for each of the experimental modules. Using a relatively common situation, the researcher wrote a scenario and developed the character of the case study. The constructivist theoretical framework guided the researcher in the conception of the discussion questions and is listed in detail in the methods chapter. Last, the researcher nor the instructor guided the group discussion. The students led small group

discussion amongst themselves. Possibly, if the instructor or the researcher was there to lead the group discussion, the results of this study could have been more significant.

As far as the learning environment, the results of this study are consistent with current research. No significant difference in academic achievement seen in all three learning milieu (online, blended, and traditional) is found in most of the nursing literature (Bata-Jones & Avery, 2004; Buckley, 2003; Coose, 2010; Hsu & Hsieh, 2011a; Leasure et al., 2000). In fact, the few studies (Alseweed, 2013; Melton et al., 2009) that found increased academic achievement in blended learning environments were not conducted using nursing students as participants. One study was in an English language program, and the other study was in a general health course. More research is needed to know the effectiveness of blended learning on nursing students' academic achievement.

Using the constructivist theoretical framework helped the researcher to design the case studies. This research study showed that the constructivist framework did not improve the individual nursing students' academic achievement throughout the semester; however, it did reveal that when the intervention group utilized the constructivist designed case studies, they improved their scores more than the control group. More research is needed to compare this theoretical framework with a different one in the same active learning strategy (scaffolding case studies) to reveal effectiveness on students' learning and academic achievement.

### **Limitations**

Many limitations exist that prevent generalizations of these findings across all populations. First, the narrow population of 60 nursing students may prevent generalizations due to a small population size. Second, this study used associate degree nursing students (ADN), which may not translate to other different nursing programs (baccalaureate, diploma, or license

practical nursing). Third, this study was conducted in a rural community college in the southern United States; other regions or areas (such as urban areas or other regions in country) could possibly receive different results.

Another limitation that may prevent generalization is using collaborative scaffolding case studies. Using other active learning strategies may provide different results. Also, implementing collaborative scaffolding case studies in class, instead of online, could produce different outcomes.

Other factors could affect a participant's achievement. Participants may not do well on tests, because they have extensive work or family responsibilities, they are under severe financial strain, they have test anxiety, they are not good test takers, or other extraneous events or factors that negatively affect academic performance.

Lastly, attrition could affect the results of the study. Participants are able to withdraw or drop from a course before final grades are determined. Participants who withdraw could have excellent grades and need to leave the class for personal reasons (such as having a baby, death in family, loss of job). Conversely, participants could withdraw due to failing grades and, thus, affect the final results of the study.

### **Implications for Practice**

This study provides more literature to the limited knowledge of collaborative scaffolding case studies in the blended learning environment. This study is the first research study on scaffolding case studies. It contributes to the body of research that collaborative scaffolding case studies may improve nursing student academic achievement. Although not statistically significant, the higher means for the experimental groups on the case study tests than for the control group could indicate increased learning with the scaffolding case studies. Also,

evaluating longer term academic achievement (final grades in class, ATI/HESI scores for course content, and NCLEX pass rates) could reveal better retention of knowledge than a module test.

More research is also needed to see if any one element (collaborative portion, scaffolding case studies, or blended learning environment) affected the results of this study. The collaborative portion could have affected the results, because everyone learns differently—some students prefer individual work and not the collaborative portion. Another active learning strategy (such as service learning, games, simulation, etc.) may also have yielded a different result as well. Eliminating the blended learning environment and using the case studies in class with an expert to help facilitate students' learning could also yield different results. However, more research is needed in this area before determining that collaborative scaffolding case studies in a blended learning environment should not be used for nursing education.

### **Recommendations**

After analyzing the results, limitations, and implications of this study, the researcher recommends the following suggestions:

1. Replicate this study in other educational institutions and classes to determine true effectiveness of scaffolding case studies in blended learning environment.
2. Investigate the correlation between amount of time spent on and the achievement on the case studies and the exam scores.
3. Analyze other outcomes besides student academic achievement for this intervention. Researchers could explore its effects on clinical performance, student satisfaction, student efficacy, or student self-esteem.
4. Implement collaborative scaffolding case studies in a traditional, face-to-face classroom to determine if the blended learning affected the study's results.

5. Conversely, use different active learning strategies in the blended format to determine if the educational intervention affected the study's results.

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APPENDIX A  
Informed Consent

**Title of Study:** “Nursing Students’ Achievement Using Scaffolding Case Studies in the Blended Learning Environment”

**Principal Investigator:** Ashleigh Woods, RN, MSN  
Doctoral candidate

**Supervising Professor:** Dr. Margaret Rice, College of Education

**Name of Organization:** The University of Alabama  
College of Education  
College of Nursing  
Tuscaloosa, Alabama

**Southeastern Community College:**

You are being asked to take part in a research study.

This study is called “Nursing Students’ Achievement Using Active Learning Strategies in the Blended Learning Environment”. The study is being done by Ashleigh Woods, who is a graduate student at The University of Alabama. Mrs. Woods is being supervised by Professor Rice, who is a professor of College of Education at The University of Alabama.

**Is the researcher being paid for this study?**

The researcher is not being paid for this study.

**Is this research developing a product that will be sold, and if so, will the investigator profit from it?**

No product is developed or will be sold.

**What is this study about? What is the investigator trying to learn?**

The purpose of this quantitative study is to examine the nursing student’s achievement in a blended learning nursing course using active learning strategies. The interventions of this study are group work that uses case studies online. These assignments will be used throughout the semester and in addition to lecture. This study will provide further research on best teaching practices in undergraduate nursing education.

**Why is this study important or useful?**

This knowledge is important because finding the best ways to teach nursing students improve nursing education. Secondly, learning the best ways to teach students can help retain them and improve the current nursing shortage. The results of this study will help nurse educators understand better ways to help nursing students to be successful in school.

**Why have I been asked to be in this study?**

You have been asked to be in this study because you are an associate degree nursing student who is enrolled in the Fundamentals of Nursing course at the Fayette campus. All enrolled students will be asked to participate.

**How many people will be in this study?**

About 70 other people will be in this study.

**What will I be asked to do in this study?**

If you meet the criteria and agree to be in this study, you will be asked to do these things: You will be asked to complete three case studies that incorporate group work. These case studies will be graded for the class. These case studies are a mandatory part of the class, not participation in the study. Your grade for the class will not be affected if you choose not to participate in the study. Rubrics are established to outline expectations of your work on these case studies. You will be asked to allow the researcher to access your test grades after your final grades are reported to the school. The researcher wants to use this data for research purposes. You will also complete a demographics questionnaire.

**How much time will I spend being this study?**

This research study will take about 10 minutes of your time to read the informed consent and complete the demographics questionnaire. The case studies are mandatory for class and will take about 3 hours for each case study for a total of 9 hours.

**Will being in this study cost me anything?**

The only cost to you from this study is your time and effort in completing the assignments.

**Will I be compensated for being in this study?**

You will not be compensated for being in this study.

**What are the risks (dangers or harms) to me if I am in this study?**

There are no perceived identifiable risks associated with the study.

**What are the benefits (good things) that may happen if I am in this study?**

Active learning strategies, like case studies and group work, have shown to improve academic achievement, to provide deeper learning, and to improve communication and teamwork skills. You may experience these benefits as well.

**What are the benefits to science or society?**

This study will help nursing instructors be more helpful to nursing students by learning best ways to design learning activities online.

**How will my privacy be protected?**

You have received an invitation to participate in the study. If you decide to participate in the study, you will complete the three case studies modules (partly individually and partly as a preformed team). The current nursing instructor will grade your tests. She will give the researcher the test scores under a randomized number. No individuals will be identified.

**How will my confidentiality be protected?**

You will not be asked for your name or any other information that might identify you. The information gathered from the study will be kept confidential. All data will only be reported as group data. The study data will only be seen by the researcher and possibly the dissertation chairperson and research committee. After the researcher completes her dissertation, any data that are downloaded to a flash drive for statistical analysis will be kept in a locked drawer in the researcher's office. The data will be erased from the flash drive after a period of three years.

**What are the alternatives to being in this study? Do I have other choices?**

The alternative to being in this study is not to participate. Your grade will not be affected if you decide not to participate in the study.

**What are my rights as a participant in this study?**

Taking part in this study is voluntary. It is your free choice. You can refuse to be in it at all. If you start the study, you can stop at any time. There will be no effect on your relations with The University of Alabama.

The University of Alabama Institutional Review Board ("the IRB") is the committee that protects the rights of people in research studies. The IRB may review study records from time to time to be sure that people in research studies are being treated fairly and that the study is being carried out as planned.

**Who do I call if I have questions or problems?**

If you have questions, concerns, or complaints about the study right now, please ask them. If you have questions, concerns, or complaints about the study later on, please call the investigator, Ashleigh Woods at (205) 454-6419. You may also contact my dissertation chairperson, Dr. Margaret Rice at [mrice@bamaed.ua.edu](mailto:mrice@bamaed.ua.edu) or call (205) 348-1165.

If you have questions about your rights as a person in a research study, call Ms. Tanta Myles, the Research Compliance Officer of the University, at 205-348-8461 or toll-free at 1-877-820-3066.

You may also ask questions, make suggestions, or file complaints and concerns through the IRB Outreach website at [http://osp.ua.edu/site/PRCO\\_Welcome.html](http://osp.ua.edu/site/PRCO_Welcome.html) or email the Research Compliance office at [participantoutreach@bama.ua.edu](mailto:participantoutreach@bama.ua.edu).

After you participate, you are encouraged to complete the survey for research participants that is online at the outreach website or you may ask the investigator for a copy of it and mail it to the University Office for Research Compliance, Box 870127, 358 Rose Administration Building, Tuscaloosa, AL 35487-0127.

I have read this consent form. I have had a chance to ask questions. I agree to take part in it. I will receive a copy of this consent form to keep.

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Signature of Research Participant

---

Date

---

Signature of Investigator

---

Date

Office for Research  
Institutional Review Board for the  
Protection of Human Subjects



September 25, 2015

Ashleigh Woods, EN, MSN  
Doctoral Candidate  
Capstone College of Nursing  
University of Alabama  
Box 870358

Re: IRB # 15-OR-288 "Nursing Students' Academic Achievement Using Scaffolding Case Studies in the Blended Learning Environment"

Dear Ms. Woods:

The University of Alabama Institutional Review Board has granted approval for your proposed research. Approval has been given under expedited review category 7 as outlined below:

*(7) Research on individual or group characteristics or behavior (including, but not limited to, research on perception, cognition, motivation, identity, language, communication, cultural beliefs or practices, and social behavior) or research employing survey, interview, oral history, focus group, program evaluation, human factors evaluation, or quality assurance methodologies.*

Your application will expire on September 24, 2016. If your research will continue beyond this date, complete the relevant portions of the IRB Renewal Application. If you wish to modify the application, complete the Modification of an Approved Protocol Form. Changes in this study cannot be initiated without IRB approval, except when necessary to eliminate apparent immediate hazards to participants. When the study closes, complete the appropriate portions of the IRB Study Closure Form.

Please use reproductions of the IRB approved informed consent form to obtain consent from your participants.

Should you need to submit any further correspondence regarding this proposal, please include the above application number.

Good luck with your research.



358 Rose Administration Building  
Box 870127  
Tuscaloosa, Alabama 35487-0127  
(205) 348-8461  
fax (205) 348-7189  
TOLL FREE (877) 820-3066



**BEVILL STATE  
COMMUNITY  
COLLEGE**

**Kristi Barnett Ext. 5703  
Office of Grants, Planning, Research, and Institutional Effectiveness**

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August 31, 2015

Dear Ms. Woods:

Bevill State's Institutional Review Committee unanimously agreed to grant your request to interview willing administrators and faculty for use in your dissertation research. Please contact Dr. Reitha Cabaniss when you are ready to begin your research, and she will assist you with connecting to the appropriate personnel as needed. We wish you the best of luck with your research.

Sincerely,

APPENDIX B

Group Questionnaire



## APPENDIX C

### Case Study for Module 3

Mrs. Brittany Jones, a 35 year-old female with appendicitis, has arrived to your unit at 11:00 pm. She is recovering from surgery to remove her appendix. She complains of severe pain at the surgical site, which is aggravated by her vomiting. She is convinced that the surgeon got her incision infected. When she dozes, she is restless and grimaces in her sleep. Her current vital signs are T: 100.6 degrees Fahrenheit, P: 100 beats per minute, R: 22 breaths per minute, O2 sat.: 99%, and BP: 140/94. Her WBC is 20,000 per cubic millimeter of blood. What do you need to do now?

Answer the following questions individually before you meet with your group.

1. What information/knowledge do you currently know that pertains to the case study? Use whatever media/method (i.e., concept maps, lists, flowcharts, tables, logarithms, outline, infographic) you choose to show this information.
2. What information do you need to know to further this patient's care? What questions do you want to ask?
3. What specific resources, besides lecture notes and textbooks, can you use to help you solve this problem? If possible, use these additional resources to answer your questions you wanted to ask in question number 2 and to the group questions.

Answer the following questions with your group:

4. What do you need to do next to care for this patient?
5. What have you learned from this patient? Integrating what you learned in class and from your resources, what can you do to improve this patient's care?

APPENDIX D

Case Study for Module 5

Two days after her surgery, Mrs. Jones, a 35 year old female patient, has an incision that is red, swollen, and contains purulent drainage. Dr. Smith, the surgeon, has opened the wound surgically and has ordered dressing changes with packing every eight hours. Two weeks later, the wound has still not been healing well. Due to the pain from the initial incision, Mrs. Jones refuses to eat. Her vital signs are T: 102.5 degrees Fahrenheit, P: 102 beats per minute, R: 26 breaths per minute, O<sub>2</sub> sat: 85%, and BP: 148/94. Her albumin is 6 g/dL, BUN is 24 mg/dL, and creatinine level is 2 mg/dL. What do you do now?

Answer the following questions individually before you meet with your group.

1. What information/knowledge do you currently know that pertains to the case study? Use whatever media/method (i.e., concept maps, lists, flowcharts, tables, logarithms, outline, infographic) you choose to show this information.
2. What information do you need to know to further this patient's care? What questions do you want to ask?
3. What specific resources, besides lecture notes and textbooks, can you use to help you solve this problem? If possible, use these additional resources to answer your questions you wanted to ask in question number 2 and to the group questions.

Answer the following questions with your group:

4. What do you need to do next to care for this patient?
5. What have you learned from this patient? Integrating what you learned in class and from your resources, what can you do to improve this patient's care?

APPENDIX E

Case Study for Module 6

Mrs. Brittany Jones', a 35 year old patient with appendicitis, condition has further deteriorated. The infection spread to her blood stream and to her brain. She is on a ventilator that breathes for her. Doctors have determined she is brain dead. Her husband was just informed of this diagnosis. He bursts out in agony: "How can this be possible? She is just 35." He is weeping in her room. What do you do now?

Answer the following questions individually before you meet with your group.

1. What information/knowledge do you currently know that pertains to the case study? Use whatever media/method (i.e., concept maps, lists, flowcharts, tables, logarithms, outline, infographic) you choose to show this information.
2. What information do you need to know to further this patient's or her family's care? What questions do you want to ask?
3. What specific resources, besides lecture notes and textbooks, can you use to help you solve this problem? If possible, use these additional resources to answer your questions you wanted to ask in question number 2 and to the group questions.

Answer the following questions with your group:

4. What do you need to do next to care for this patient and her family?
5. What have you learned from this patient and her family? Integrating what you learned in class and from your resources, what can you do to improve this patient's or her family's care?