ABSTRACT

For many nursing students, the classroom and clinical experience represent two different learning environments. The disconnect between classroom and clinical learning also parallels an important professional need--bridging students’ transitions from nursing school to professional practice (Benner, Sutphen, Leonard, & Day, 2010; Institute of Medicine, 2011). Utilization of an unfolding case study (UCS) in the classroom setting allows the students to participate in a realistic, complex, problem centered activity while learning to think like a nurse. The purpose of this study was to address the challenge to improve teaching and learning by integrating clinical experiences into classroom education (Benner, et al., 2010; IOM, 2011). Although unfolding case studies have been used in nursing pedagogy, there is little empirical research in nursing education to support this interactive teaching strategy. In fact, there are no research studies in nursing that test transfer of knowledge with the use of an UCS in the classroom setting. This quantitative study examined the effects of an UCS on undergraduate nursing students learning outcomes. This intervention study took place in a naturalistic setting comparing a traditional slide lecture (n = 83) to an UCS (n = 98) by testing learning outcomes with the use of a pretest, posttest, and transfer test. A student perception survey was also administered after each teaching session. This study begins to address the gap in the literature by examining learning outcomes and transfer of knowledge. The results of the 2 x 3 repeated measures analysis of variance reveal that students in the UCS group learned at a similar rate as the lecture group. Neither group demonstrated transfer of knowledge on the transfer test. The one-way analysis of
variance performed on the survey results revealed that students in both the UCS and lecture group felt that the teaching session was more aligned with the clinical setting than the reading assignment given prior to the teaching session. However, the UCS group did not identify their teaching session with the clinical setting at a significantly higher rate than the lecture group.
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<td>ANOVA</td>
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<td>UCS</td>
<td>Unfolding Case Study</td>
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<td>SPSS</td>
<td>Statistical Package for the Social Services</td>
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ACKNOWLEDGMENTS

I would like to first thank my Lord and Savior, Jesus Christ for the ability to accomplish this overwhelming task. During the four-year time period of pursing my doctorate, I lost a dear friend, my sister, and my grandparents. My faith, family, and friends helped me through my grief while I continued to persevere through these difficult times. Secondly, I want to thank my husband, Greg, and children, Emma Grace and Jackson. My husband provided emotional, physical, and financial support through this entire process. He selflessly gave his time and energy to take my place when I couldn’t be there. My children are my most precious blessing from Jesus and I am so grateful to be their Mom. They cheered me on by always wishing I passed all my “tests” and they hoped my teachers were nice. I would also like to thank my parents, Roy and Vickie Roberts, for believing in me and supporting me in all that I do. Thank you for teaching me that hard work and dedication can be rewarded with success.

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I dedicate this dissertation in loving memory of my sister, Jennifer Roberts. *Even the darkest night will end, and the sun will rise.* Victor Hugo.
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CHAPTER I:
INTRODUCTION

In the United States, the education of nurses began in hospital-based apprenticeship programs, focusing on learning through practice (Keating, 2015). By 1909, the first college based nursing program was developed in Minnesota establishing formal classroom education (National League for Nursing [NLN], 2012). The classroom environment has evolved over the years as nurse educators worked to establish their profession. Historically, educators focused on teaching strategies that put the educator at the center of the activity, imparting their knowledge on the student via a formal lecture (Ulrich & Glendon, 2005). In the last few decades, teaching strategies have changed as educators facilitate learning by focusing on the student through active teaching and learning strategies (Ulrich & Glendon). Nursing education has come full circle, needing to return to its beginnings by incorporating principles of the apprenticeship model into the classroom setting to bridge the classroom to clinical gap.

A hallmark of excellence in nursing education is evidence based, innovative, and varied teaching and learning strategies that develop critical thinking skills and meet the growing demands of the nursing profession (Benner, Sutphen, Leonard, & Day, 2010; Institute of Medicine [IOM], 2011; National Advisory Council on Nurse Education and Practice [NACNEP], 2010; NLN, 2012). To meet this standard of excellence, classroom and clinical learning environments should be tightly connected, complimenting one another in nursing students’ preparation for the rigors of professional nursing practice. However, for many nursing students, the classroom and clinical experiences represent two different learning environments
The disconnect between classroom and clinical learning also parallels an important professional need; bridging students’ transitions from nursing school to professional practice (IOM, 2011; National Council of State Boards of Nursing [NCSBN], 2016). We must address this problem as a field because our failure to prepare students for this transition has been attributed to the high turnover rate for new nurse graduates, job stress, and the desire to work in a different clinical setting (IOM, 2011; NCSBN, 2016).

Nursing education can begin to address this problem by designing learning experiences that intentionally align classroom education with clinical experiences whenever possible. One interactive teaching strategy that presents clinical experiences in the classroom setting is an unfolding case study (UCS). An UCS is an active, experiential teaching strategy that facilitates critical thinking (Carr, 2015). Students are exposed to contextualized and complex patient care problems with progressive scenarios (Carr, 2015). These cases can be presented in the classroom, skills lab, or clinical setting to cover the content knowledge of the nursing courses, but do so in a way that is better aligned and more akin to what the student will experience in their clinical practice. While there are a variety of interactive teaching strategies, the UCS is chosen for this research because it can be implemented in the classroom setting, and it can be done without any complicated technology or costly equipment. Limited only by creativity, UCS are practice-based, inexpensive, and easily integrated into classroom lecture (Carr, 2015). The classroom is where students first learn about nursing care, and it is also where the biggest disconnect occurs in learning to practice as a nurse (Benner et al., 2010).

An UCS presents a patient scenario in a step-wise approach. The student receives a paragraph detailing a patient’s clinical presentation and background information. The information presented in the case is grounded in evidence-based literature, standards of care, and
current treatment guidelines. The student is given questions that prompt discussion about the scenario. The questions are thought provoking and require the students to analyze the scenario and make conclusions based on the information provided. The students are assigned to small groups to discuss the questions. The case study progressively “unfolds” as more information and questions are given to the students. Eventually, the case ends, and the students are assigned a reflection or debriefing component to deepen the learning experience. The reflection allows the students to identify areas of strengths and weaknesses of their knowledge of nursing care (Ulrich & Glendon, 2005). An UCS connects classroom and clinical learning by presenting nursing students with a clinical experience in the classroom setting. The unfolding case presents a patient scenario that the student might experience in the clinical setting, allowing the student to use critical thinking skills that teach the student to think like a nurse. Developing critical thinking skills in the classroom setting prepares the student for their clinical experience, helping to bridge the gap between nursing education and clinical practice.

The UCS presented in this study will cover the nursing care of a burn patient. The incidents and treatment of burns in the United States in 2016 was 486,000, of those, 40,000 required hospitalization (American Burn Association [ABA], 2017). Burn nurse competencies promote quality nursing care for burn patients, while establishing the importance of nursing care for burn patients (ABA, 2017). The International Society for Burn Injury ([ISBI], 2016) established practice guidelines to improve the care of burn patients for all providers caring for burn patients. Caring for a burn patient requires a multidisciplinary team, with the nurse being the center of this team. The nurse coordinates and oversees total care of the patient. Burn centers are few in number and scattered geographically, making it even more imperative to adequately train all nurses on burn care (Greenfield, 2010). In the U.S., there are only 60 certified burn
centers that meet the criteria for verification by the American College of Surgeons (ACS) and the American Burn Association (American College of Surgeons Health Policy Research Institute, 2011).

Nursing care for burn patients is often a challenging topic for the students as they struggle with grasping the complexity of electrolytes, calculating body percentage burned, and determining the rate of intravenous infusions for fluid replacement. A cross-sectional study of 107 nursing students from four higher education institutions was performed to determine the knowledge of nursing students on the initial care provided to burn victims. The results of the study revealed only 22.4% had adequate knowledge to care for burn patients (Meschial, 2014). Burns result in complex injuries with loss of tissue integrity, resulting in physiologic, metabolic, and psychological changes in a patient. The incidence of burn cases, lack of certified burn centers, and complex nursing care of burn injuries provides the evidence needed to improve educational practices in educating student nurses on this topic (ABA, 2017; Greenfield, 2010).

**Purpose of the Study**

The purpose of this study was to address the challenge to improve teaching and learning strategies by integrating clinical experiences into classroom education (Benner et al., 2010; IOM, 2011). Specifically, the purpose of this quantitative study was to examine the effects of an UCS on undergraduate nursing students learning outcomes. This intervention study took place in a naturalistic setting comparing a traditional slide lecture to an UCS by testing learning outcomes with the use of a pretest, posttest, and transfer test. A student perception survey was also administered after each teaching session. The study was conducted at a large, public baccalaureate program in the southeast region of the U.S.
Theoretical Framework: Situated Cognition and the Learning Sciences

Situated cognition was developed by Jean Lave and Etienne Wenger (Lave & Wenger, 1991). Situated cognition evolved from the work of Vygotsky, who is the author of Social Development Theory. This constructivist theory stressed the role of social interaction in the development of cognition. Vygotsky believed cognitive development was integrated with culture. Three major themes associated with this development theory include social interaction, more knowledgeable other, and the zone of proximal development (McLeod, 2014). Social interaction precedes development, occurring between people, and then inside a person. A novice and expert must collaborate during the learning experience, and there is a time or distance that the novice requires before becoming the expert (McLeod, 2014). Social Development Theory acknowledges the learner’s control as well as the collaboration with the teacher to construct meaning for the student. The efficacy of the instruction is dependent upon the teacher’s knowledge of the content, instructional strategies, and a positive learning environment (Utley, 2011).

The theory of situated cognition argues that meaning is created within context. In situated cognition, the learning activity is presented in a specific context and the students construct knowledge from the experience. The success of this type of learning is determined by the social interaction and sensory experience of the learner (Lave & Wenger, 1991). The pedagogical implications of situated cognition are that instruction needs to be contextualized in ways that are relevant to student’s personal and professional lives. Unlike slide lectures, where the instructor often discusses information disconnected from the context in which it would be used, this approach better aligns classroom learning with clinical experiences. In short, learning occurs via situated interaction and purposeful activity (Lave & Wenger, 1991). The assumptions of situated
cognition are that students learn best when presented with an authentic task that simulates the real-world. Learning does not occur in a decontextualized setting (Brown, Collins, & Duguid, 1989). The context of a situation determines how people solve problems; therefore, learning to solve a problem must also be presented in a similar context (Winn, 1993).

The learning sciences is an interdisciplinary approach that studies the science of teaching and learning. The goal of the learning sciences is to understand the cognitive and social processes that result in effective learning (Sawyer, 2006). Three fundamental principles of learning include engaging prior understanding, organizing for understanding, and metacognition (National Research Council, [NRC], 2005). The first principle of learning, engaging prior understanding, is important because students do not enter to the classroom as a blank slate, they come with prior knowledge and experiences that influence their ability to learn. Learning is increased when teachers assess the knowledge and beliefs students bring to the classroom and monitor their understanding (NRC, 2000). The second principle, organizing for understanding, states that students learn better when information is organized around patterns and relationships, allowing the student to extract meaning from the information being taught. The third principle, metacognition, encourages students to take control of their own learning by monitoring their level of understanding (NRC, 2000).

The primary goal of learning is for transfer. Transfer is the ability to take the information learned in one area and apply it to another. Metacognition is used to facilitate transfer. The context of the environment where learning occurs can affect transfer. Prior knowledge is also an important component of transfer (Lauder, Reynolds, & Angus, 1999). Some important characteristics of learning and transfer include initial learning is necessary, over contextualization can reduce transfer, transfer is an active process, and all new learning requires
transfer of previous learning. Over contextualization can be minimized by providing additional examples or cases that allow students to develop a more flexible transfer. Asking “what-if” questions also improves the students’ ability to apply the information in a different context. Lastly, case examples can be generalized to encourage students to create a solution that can applied to a general concept rather than a specific problem (NRC, 2000).

Combining situated cognition and the learning sciences provides a framework that aligns classroom and clinical learning environments, while maximizing student learning. Situated cognition connects classroom learning to the clinical environment by providing context that encourages the student to think like a nurse. The learning sciences provides foundational principles of learning to increase the effectiveness of teaching and learning.

To improve classroom learning, student’s participation in realistic, complex, problem centered activities becomes of paramount importance. An UCS is consistent with the principles of situated learning by providing students with a patient case that is contextualized and consistent with more authentic clinical nursing practice than traditional instructional approaches. This provides students with an experiential learning experience via acculturation into the profession of nursing by promoting a learning community where students can exchange ideas and provide feedback to each other (Onda, 2012). The UCS provides a more authentic patient scenario by presenting a case similar to what a student might experience in the clinical setting. The student will be guided by the experienced teacher through the patient case. The students will also collaborate in groups to find solutions they would not otherwise develop without the group interaction. This simulates the multidisciplinary team environment that nurses’ function in on a daily basis. The UCS also includes a reflection component, which allows students to negotiate prior knowledge with new knowledge as well as self-evaluation (Onda, 2012). An unfolding case
is also consistent with principles from the learning sciences by building on previous knowledge, organizing for understanding, interleaving nursing concepts, and including a reflective writing assignment that allows the student to monitor his or her progress with the patient case. Not only is an UCS consistent with these frameworks, but it also meets the call for nursing education reform (Benner et al., 2010; IOM, 2011) by presenting a case based scenario in the classroom setting allowing the student to practice caring for a patient as they would in the clinical setting, resulting in a more connected classroom and clinical experience. An unfolding case study helps to bridge the gap between theory and clinical learning by encouraging active student participation and group collaboration, which allows for multiple perspectives rather than one right answer. This approach aligns with current nursing education trends that focus on learning and integrative thinking (Valiga, 2013).

Utilizing an UCS within this combined framework yields the following research questions.

**Research Questions**

Research Question 1: a. Does the utilization of an unfolding case study increase nursing students’ learning outcomes? B. Does the utilization of an unfolding case study increase nursing students’ learning outcomes more than traditional lecture methods?

Research Question 2: a. Does the utilization of an unfolding case study promote knowledge transfer? B. Does the utilization of an unfolding case study promote knowledge transfer more than traditional lecture methods?

Research Question 3: Do students recognize the connection between a classroom-based unfolding case study and clinical practice?
Limitations of the Study

Limitations of a study are not under the control of the researcher. One limitation of this study included the use of a convenience sample of baccalaureate nursing students from one college in the southeastern United States. This limited the generalizability to other colleges or regions. Secondly, the topic of burns is a single topic within a larger adult class. Ideally, one would want to examine the use of unfolding case studies that were integrated across an entire course. Lastly, the participants effort in their class preparation for the UCS as well as their effort on the multiple-choice questions and survey used in the study could greatly affect the study results.

Delimitations of the Study

Delimitations of the study are under the control of the researcher. One delimitation of the study includes that participation was only offered to students enrolled in their adult health course, the course where students receive their burn lecture. Also, an UCS was chosen as the active learning strategy due to the low cost and ease of use in the classroom setting. Lastly, the classroom setting was chosen to present the UCS due to the gap in the literature evaluating this technique on understanding and transfer in this setting.

Summary

Nursing education has evolved over the years from hospital apprenticeships to institutions of higher education. The focus of classroom learning has shifted from the teacher to the student. Research shows that active learning strategies promote critical thinking and more effective learning (Penn, 2008). Despite this information, many nurse educators continue to use traditional teaching strategies that do not engage the learner. Nursing education needs classroom reform to address the challenges identified by IOM (2011) and Benner et al. (2010) to include
interactive teaching strategies improving the transition of the nursing student from the classroom to the clinical setting as well as ensuring nursing competencies. An unfolding case study presents the student with a clinical scenario allowing the student nurse to apply nursing knowledge and make clinical nursing decisions about patient care. Presenting clinical experiences in the classroom will bridge the gap between the classroom and clinical setting by allowing nursing students to simulate what will occur in the clinical setting.
CHAPTER II:
LITERATURE REVIEW

This section of the dissertation will provide a literature review that will identify a call for education reform in nursing education, discuss the use of situated cognition and the learning sciences as a framework for nursing pedagogy, analyze an unfolding case study as a teaching strategy in nursing education, and evaluate the effects of unfolding case studies on learning and transfer. The SCOUT search engine was used to search multiple databases via The University of Alabama’s online library services. The search descriptions were “situated cognition,” “unfolding case study,” and “unfolding case study in nursing.” Further descriptors to limit the search included “education,” “nursing,” “pedagogy,” “peer reviewed journals,” and “publication date.” These descriptors were used to limit the search to a reasonable amount, as there is a vast amount of literature on the use of case studies as a teaching strategy.

Call for Education Reform: Connecting Classroom Instruction to Clinical Experiences

There is a disconnect between nursing students’ classroom instruction and clinical experience. Benner et al. (2010) identified a gap in knowledge acquisition between nursing education and the clinical setting. The difficult transition from the classroom to the clinical setting for a new nurse creates negative outcomes for patient care, resulting in decreased patient safety and increased practice errors (National Advisory Council on Nurse Education and Practice [NACNEP], 2010; NCSBN, 2016). Nursing education is not adequately preparing the student with necessary competencies needed to care for patients (IOM, 2011). Interviews with new nurse graduates, preceptors, nurse managers, and educators revealed a lack of skills in new nursing
graduates and a need to bridge the gap by synchronizing education and practice (Yurdin, 2007). One way to address this disconnect is to develop teaching pedagogies that focus on the patient’s experience, including their physiological and psychological aspects of care. Examples of these pedagogies include scaffolding, simulation exercises, unfolding case studies, narratives, and interviews (Benner et al., 2010). Implementing these teaching pedagogies will address the challenges identified in nursing education, so that nurses can deliver patient-centered care that is high-quality within the fast-paced, unpredictable clinical environment (NACNEP, 2010). Integrating classroom and clinical instruction also improves nursing students’ ability to keep up with the new nursing knowledge produced every year (NACNEP, 2010). Nurse educators should employ teaching strategies that promote critical thinking and clinical decision making (Yurdin, 2007). The educational preparation of the newly graduated nurse has a significant association with patient outcomes and mortality rates, making the need to address this knowledge gap imperative (IOM, 2011).

In summary, several reports recommended improving the quality of nursing education by including innovative teaching strategies that promote critical thinking in the classroom, resulting in a more positive transition from the classroom to the clinical setting (Benner et al., 2010; IOM, 2011; NACNEP, 2010; NCSBN, 2016; Yurdin, 2007).

**Situated Cognition and the Learning Sciences as a Framework for using Unfolding Case Studies in Nursing Pedagogy**

**Situated Cognition**

Nurse educators are challenged with implementing teaching pedagogies that promote clinical competency and critical thinking skills in nursing students (Onda, 2012). A theory to practice gap has been identified, wherein the didactic content taught in the classroom does not translate well to clinical practice (Benner et al., 2010; IOM, 2011). Situated cognition states that
students learn best when activities are authentic, resulting in transformation of knowledge from abstract ideas to practical, applicable information (Brown et al., 1989). Situated cognition bridges the theory to practice gap by providing students with authentic scenarios that simulate what will be experienced in the clinical setting. The assumptions of situated cognition can be explained further in an example of teaching vocabulary words to students. Experienced readers understand that words are situated; therefore, they prefer the vocabulary word to be put into a sentence or context before interpreting the meaning of the word (Brown et al., 1989). Research showed that students learned vocabulary at a rate of 5,000 words per year by listening, talking, and reading in their natural environment, compared to 200 words per year via abstract definitions and sentences taken out of the natural context and taught in the classroom (Brown et al., 1989). Knowledge, like the meaning of a word, is situated and will evolve over time as it is used in different context, deepening the understanding or meaning (Brown et al., 1989). Purposeful learning requires authentic activities that would naturally occur in an environment. Classroom tasks that are abstract fail to provide the contextual factors necessary for an authentic activity (Brown et al., 1989).

Lave and Wenger (1991) further characterized situated cognition by a process called legitimate peripheral participation. This requires an active, collaboration between the novice and the expert. This concept articulates the social activities, knowledge, and practices that are engaged in by the learner and the teacher. Learning involves the holistic person including their relationship with the activity as well as social communities. The learner becomes a full participant, evolving into their new identity and person, related to their social community. Situated cognition theory is developed from the notion of apprenticeship. Legitimate peripheral participation is not a pedagogy or type of formal education, rather, it is a perspective on learning.
Situated cognition brings a new perspective to the learning experience, one that allows the nursing student to evolve as he or she learns to eventually identify as a nurse (Lave & Wenger, 1991).

An example of situated learning using a patient scenario includes a student administering the wrong dose of medication during a simulation, despite correctly calculating the drug dose before the simulation (Paige & Daley, 2009). In this example, the student had the knowledge of how to obtain the correct medication calculation, but when trying to apply this knowledge during an active simulation, the student miscalculated the medication dose. Presenting an unfolding case study will allow learning to occur in a similar context as the clinical setting and transition the student’s role from student nurse to the nurse. In this study, the researcher presented an unfolding case about a burn patient. The students were placed into small groups for the activity. A written scenario was given to the students introducing the case with some general background information. As the students progressed through the case study, more information was given, and the students made clinical decisions based on the patient case.

When presenting an unfolding case study, knowledge is situated in a context and presented in a narrative form. Authenticity is an important factor to gain situated knowledge and transition into the new meaning for the learner (Kim & Hannafin, 2008). Situated cognition was used as a framework to implement case-based knowledge in the education of teachers (Kim & Hannafin, 2008). Study participants progressed through case-based activities to develop lesson plans for their unit of study while also incorporating technology. Initially, the students had a difficult time developing their lesson plans due to their lack of experience. As the students progressed through the project, their contextual awareness deepened with the guidance of the
expert teacher, resulting in a transition to identify and believe like a professional teacher (Kim & Hannafin, 2008).

Situated cognition has been utilized as a learning framework in nursing education. In one example, situated cognition provided a framework to guide an unfolding case study in conjunction with high-fidelity simulation presenting real-life nursing scenarios (Paige & Daley, 2009). Three components necessary for situated cognition included interaction between people, tools used, and participation of the student (Paige & Daley, 2009). An UCS includes all of these necessary components by collaboration with the instructor and peers, providing context, and interaction during the case as well as reflection at completion of the case. Situated peer coaching utilizes the principles of situated cognition. This teaching strategy was used in a skills lab setting as students coached each other using case study scripts, one student played the role of the nurse and the other as the script reader (Himes & Ravert, 2012). This mixed-methods study evaluated the students’ rating of their own performance in the skills lab. The results revealed high course ratings. Students reported coming to class more prepared, increased self-assessment, and a friendly learning environment (Himes & Ravert, 2012). The authors’ concluded by utilizing principles of situated cognition, they were able to teach nursing students roles, values, and judgements rather than nursing skills alone (Himes & Ravert, 2012). Situated cognition also provided the theoretical framework for a nursing research workshop for novice nurse researchers (Gieselman, Stark, & Farruggia, 2000). Situated learning techniques included in the research workshop were storytelling, reflection, cognitive apprenticeship, collaboration, coaching, multiple practice, articulation, and technology. Participants were divided into small groups, and an experienced researcher mentored each group. The authors recommended further research and utilization of situated cognition to develop a deeper understanding of the learning process.
Situated cognition provided a learning framework for teaching nursing students about end-of-life care during simulation (Wyrostok, Hoffart, Kelly, & Ryba, 2014). Teaching and learning outcomes were evaluated via debriefing, a self-evaluation survey, and class discussion. The study findings indicate that simulation provided an authentic learning environment guided by the framework of situated cognition. Students demonstrated competencies required by nurses during end-of-life care (Wyrostok et al., 2014).

In summary, the literature identified a theory to practice gap in nursing education (Benner et al., 2010; IOM, 2011). The use of situated cognition as a framework to guide unfolding case studies bridges the theory to practice gap by presenting evidenced based nursing knowledge using realistic patient care scenarios that promote critical thinking skills in nursing students (Brown et al., 1989; Paige & Daley, 2009). The literature provides examples of situated cognition as the theoretical framework to guide teaching strategies in the classroom and simulation setting (Gieselman et al., 2000; Himes & Ravert, 2012).

**Learning Sciences**

The learning sciences is an interdisciplinary science of psychology, education, computer science, and anthropology, collectively collaborating to develop a synthesis of several decades of research on thinking and learning (Sawyer, 2006). Teaching strategies that include the three fundamental principles of learning are proven to be more effective than other methods. First, initial understanding of preconceptions must be engaged to grasp new concepts (NRC, 2005). Students come to the classroom with prior knowledge and life experiences that define their understanding of the world. This foundational knowledge can have a powerful effect on the understanding of new concepts and information. Therefore, the first fundamental principle of learning states that effective teaching strategies should assess students’ prior knowledge in order
to build on or challenge their initial understanding (NRC, 2000). The second principle states a deep foundation of factual knowledge with organization of information in the context of a conceptual framework is necessary (NRC, 2005). Factual knowledge is necessary to identify patterns, generate arguments, and draw analogies to other problems. When applying knowledge, factual information lays the foundation for development of a deeper understanding. Factual knowledge must be organized in a way that facilitates retrieval and application (NRC, 2000). The third fundamental principle of learning includes metacognition (NRC, 2005). Metacognition is the ability to monitor one’s own progress of learning (NRC, 2000). Examples of metacognitive teaching strategies include self-assessment techniques and reflection. These techniques should be incorporated into the subject matter being taught (NRC, 2000). Transfer is the ability to take information learned in one setting and apply it to another. Utilization of the three fundamental principles of learning promote transfer. Metacognition practices, as well as organizing information into a conceptual framework, increase transfer (NRC, 2000).

**Understanding and Transfer**

Knowledge transfer is hindered when instructional strategies create a disconnect from the setting in which the knowledge or skills will be used (Winn, 1993). Situated cognition includes principles of expert modeling, authentic activities, and the generalizability of the knowledge (Catalano, 2015). Situated cognition provides authentic activities that should illustrate the use of the knowledge beyond the activity in which it is learned (Catalano, 2015). Applying the principles of situated cognition by teaching a concept in the context of real world application can facilitate transfer (Catalano, 2015). One experimental study evaluated transfer in an online information literacy course comparing situated learning to a traditional instruction group with use of a pretest, posttest, and transfer task. Study results demonstrated transfer occurred more
often in the situated learning group, where the students were provided the opportunity to apply
the knowledge in different situations (Catalano, 2015). Another study evaluated the use of
situated cognition and problem-solving in the subjects of math and science in students with
learning disabilities. The participants watched a video about a boy needing to solve a problem
using embedded math concepts. The study results revealed the students engaged in real world
problem-solving were more successful in transferring than students in the comparison group
(Gersten, Baker, & Marks, 1998).

In nursing literature, there is a limited amount of quantitative studies evaluating
understanding and transfer with the use of an UCS. One quantitative study compared a video
recorded slide lecture to an unfolding case study in a simulation lab. Repeated-measures analysis
of variance compared within-group and between-group data on a pretest and posttest, revealing
significantly higher posttest scores in the unfolding case study group (McCormick, Romero, &
Fuller, 2013). Another study revealed that an unfolding case was a valid and reliable method to
assess clinical decision-making skills in a convenience sample of nurse practitioner students
(O’Rourke & Zerwic, 2016). A quasi-experimental study evaluated critical thinking skills with
the use of a pretest and posttest comparing an unfolding case study to a traditional slide lecture in
associate degree nursing students (Carter & Welch, 2016). The study results revealed that both
groups performed worse on the posttest. The authors hypothesized that their use of a Health
Sciences Reasoning Test was not an effective method to evaluate critical thinking (Carter &
Welch, 2016). Finally, a randomized controlled study compared the effectiveness of an unfolding
case study to a usual nursing case for development of nursing students’ critical thinking skills
(Hong & Yu, 2017). Participants included 122 undergraduate nursing students in four medical
nursing classes. The experimental group received lectures presenting unfolding case studies,
while the control group received their usual lecture cases (Hong & Yu, 2017). A critical thinking instrument evaluated each group before and after the intervention. Study results revealed significantly higher improvement in critical thinking in the experimental group compared to the control group (Hong & Yu, 2017).

There is some debate on the amount of context needed to promote learning and transfer. Over contextualization reduces transfer, making it difficult for the student to apply the knowledge in a different context (NRC, 2000). However, situated cognition states that learning is situated within the context of the environment (Lave & Wenger, 1991). The important point to make here is that context is needed to learn, however, the information must be general enough to apply in multiple situations. One mixed method study evaluated physicians to determine the impact contextual factors had on their clinical reasoning skills. The physicians watched three video recorded clinical encounters presenting straightforward medical diagnosis with manipulation of specific contextual factors (McBee et al., 2015). Situated cognition asserts that the physicians’ clinical reasoning will be influenced by the context of the situation and will not solely be based on the physician’s knowledge. The purpose of the study was to evaluate the relationship between contextual factors and clinical reasoning as explained by situated cognition. All of the study participants recognized and acknowledged contextual factors while watching the video encounters. The researchers identified four consequences of the contextual factors: emotional reactions, behavioral inferences, optimizing the doctor patient relationship, and difficulty with closure of the encounter (McBee et al., 2015). The authors concluded the physicians experienced an increase in cognitive load due to the contextual factors which influenced their diagnostic decision making. The patient contextual factors interfered with the residents clinical reasoning, leading to diagnostic uncertainty (McBee et al., 2015). The findings
of this study have implications for teaching future physicians how to manage multiple interactions. Another way to look at the implications of situated cognition would be to acknowledge that if a person can find a different solution in two different situations, the person can also identify factors that distinguish each situation (Compton, 2013).

In summary, utilization of an unfolding case study incorporates situated cognition and the learning sciences by presenting an authentic patient care scenario that builds on prior understanding, organizes factual and conceptual information, and encourages metacognition with the use of reflection. Designing classroom experiences that align with situated cognition and the learning sciences promote transfer. In the nursing literature, there is a limited amount of quantitative studies evaluating understanding and none that evaluate transfer after implementation of an UCS in the classroom setting (Carter & Welch, 2016; McCormick et al., 2013).

**Unfolding Case Study as a Teaching Strategy in Nursing Education**

Several articles reviewed in the literature discussed utilization of an unfolding case study as a teaching strategy. The unfolding case can be used in a variety of settings and implemented over the length of one class or the entire semester (Kaylor & Strickland, 2014; Laver & Croxon, 2015). An unfolding case study can present patient care scenarios that are difficult for student nurses to experience in the clinical setting. An NLN case was used to simulate a death experience with undergraduate nursing students. The students completed an anonymous questionnaire during the debriefing that described their experience with the interactive teaching strategy, stating it was positive and one that prepared them for their clinical experience (Kopka, Aschenbrenner, & Reynolds, 2016). One student commented that the learning experience was beneficial and would be useful in his or her nursing career. Another student commented that the
experience would help them know what to say to a family member or patient during end-of-life care (Kopka et al., 2016). A mixed-method study demonstrated students were satisfied and felt confident about their learning process with the use of an unfolding case study in conjunction with simulation (Mills et al., 2014). Providing nursing students with this experience via the use of an UCS prepares students to address these issues when they experience them in the clinical setting. Nurse educators are challenged with covering massive amounts of nursing science content. One educator implemented case-based learning into her classroom and found she was able to cover more content using this approach than if she followed a pre-determined topical outline (Ironside, 2004). A qualitative study evaluating the use of an unfolding case study, low-fidelity simulation, and PowerPoint as an active teaching strategy used to integrate classroom and clinical learning revealed a positive experience for the students (Moyer, 2016).

Unfolding case studies have been presented in conjunction with a variety of technologies. A qualitative study evaluating the use of technology with an unfolding case study revealed increased problem-solving skills in the clinical setting based on a rubric developed to evaluate the unfolding case (Yousey, 2013). A mixed-method study compared three technologies including a blog, wiki, and webinar to deliver the unfolding case. The study results revealed no significant difference between the technologies used to perform the case study assignment. The participants also completed a Likert scale satisfaction survey which showed the student’s identifying positive outcomes from the assignment (Vogt & Schaffner, 2016).

Unfolding case studies have been utilized in medical student education. A qualitative study evaluated the use of palliative care communication techniques in fourth year medical students (Goldsmith, Wittenburg-Lyles, Shaunfield, & Sanchez-Reilly, 2011). Palliative care unfolding case studies were presented to students to evaluate their communication techniques
with patients dealing with end-of-life medical care. The study results revealed that students failed to use palliative care communication techniques when dealing with scenarios portraying terminal illness patients (Goldsmith et al., 2011). During the reflective exercise, the students acknowledged their lack of therapeutic communication during end-of-life care. Findings of the study support use of an unfolding case study as an exercise in preparing medical students to utilize effective palliative care communication in the clinical setting (Goldsmith et al., 2011).

Taradi and Taradi (2016) compared the use of an unfolding case study to traditional didactic lecture in second-year medical students with the use of pretest and posttest. The students used their cell phones as a web-based clicker to answer questions about physiological concepts at three time intervals. The unfolding case study group scored significantly higher than the traditional lecture group. A qualitative survey revealed a positive experience for the unfolding case study learners. Most students had not experienced this active teaching strategy and wanted to repeat the experience (Taradi & Taradi, 2016).

In summary, utilization of an unfolding case study as a teaching strategy is well documented in the literature. Most of the literature reviewed describes the student experience with this strategy as a positive one. The students also perceived this teaching strategy as one that is closely connected to the clinical setting (Ironside, 2004; Kaylor & Strickland, 2014; Laver & Croxon, 2015). Again, the literature reveals a gap in quantitative studies evaluating understanding and transfer in nursing education (Kopk et al., 2016; Mills et al., 2014)

**Significance**

The study results will add to the body of knowledge on the use of situated cognition and the learning sciences to implement an instructional teaching strategy in nursing education. The overall goal is to determine if this teaching strategy increases student learning outcomes and
transfer. Increased student learning outcomes result in deeper understanding of nursing science content. The study results could provide evidence for nurse educators to employ this active teaching strategy in the classroom setting as one means to bridge the classroom to clinical gap. Though researchers have argued the importance of interactive teaching strategies such as an unfolding case study, there is little empirical evidence that proves this method results in better learning outcomes than a traditional slide lecture (Benner et al., 2010; McCormick et al., 2013; Carter & Welch, 2016). This study will test the efficacy of an unfolding case study to determine if learning outcomes improve.

**Research Questions**

Unfolding case studies are more closely aligned with the principles of situated cognition and the learning sciences. Despite this information, many nurse educators continue to use traditional slide lectures to teach nursing students resulting in a disconnect between classroom and clinical settings. Although, UCS align with the principles of situated cognition and the learning sciences, there is a lack of empirical evidence that this interactive teaching strategy increases knowledge retention and transfer. The research questions listed below will begin to address this knowledge gap in nursing education.

Research Question 1a: Does the utilization of an unfolding case study increase nursing students’ learning outcomes?

*Hypothesis 1a*

H<sub>0</sub>: There is no statistical difference in the pretest and posttest scores in the unfolding case study group.

H<sub>1</sub>: The unfolding case study group will have statistically significant higher posttest scores compared to pretest scores.
Research Question 1b: Does the utilization of an unfolding case study increase nursing students’ learning outcomes more than traditional lecture methods?

Hypothesis 1b

H₀: There is no statistical difference in the rate of change between the lecture and unfolding case study group.

H₁: The unfolding case study group will have a statistically significant higher rate of change than the lecture group.

Research Question 2a: Does the utilization of an unfolding case study promote knowledge transfer?

Hypothesis 2a

H₀: There is a statistically significant decrease from the posttest to transfer test scores in the unfolding case study group.

H₁: There is not a statistically significant decrease from the posttest to transfer test scores in the unfolding case study group.

Research Question 2b: Does the utilization of an unfolding case study promote knowledge transfer more than traditional lecture methods?

Hypothesis 2b

H₀: There is no statistical difference in the rate of change between the slide lecture and unfolding case study group.

H₁: The unfolding case study group will have a statistically significant lower rate of change than the lecture group.

Research Question 3: Do students recognize the connection between a classroom-based unfolding case study and clinical practice?
Hypothesis 3

H₀: There is no statistical difference in the students’ recognition of the connection between a classroom-based unfolding case study and clinical practice.

H₁: The unfolding case study group will have a statistically significant higher recognition of the connection between a classroom-based unfolding case study and clinical practice.

Summary

The literature review evaluated and synthesized the use of unfolding case studies in nursing education. Utilization of this teaching strategy is well documented in the literature (Ironside, 2004; Kaylor & Strickland, 2014; Laver & Croxon, 2015). Some of the literature reveals qualitative or mixed studies that evaluate student learning perceptions (Mills et. Al., 2014; Vogt & Schaffner, 2016; Yousey, 2013). While these efforts are important to evaluate the students’ experience, they do not empirically measure if learning outcomes improved. Only two empirical nursing studies measured learning outcomes with the use of a pretest and posttest. One study examined knowledge and critical thinking skills, while the other evaluated critical problem solving by evaluating assessment skills (Carter & Welch, 2016; McCormick et al., 2013). Therefore, much has been written on the concept and student perception of an unfolding case study, but the literature review reveals only two empirical studies assessing learning with this pedagogical approach, and none evaluated transfer of knowledge in nursing.

While research demonstrated utilization of an unfolding case study created a perceived connection between classroom education and clinical experience, we still need to further explore this in the future (Kopka et al., 2016). The preparation of educating future nurses begins in the classroom setting. The traditional lecture methods are appropriate at times and can be effective,
but interactive teaching and learning strategies need to be studied further to determine if transfer of knowledge occurs more effectively. While there are a variety of interactive classroom teaching and learning strategies, the UCS was chosen for this study because it can easily be implemented within the classroom environment with minimal technology and no costly equipment. Several studies reviewed in the literature evaluated the use of an UCS with simulation (Kopka et al., 2016; McCormick et al., 2013). This study aimed to decrease the gap in the literature by performing an intervention study in the classroom setting assessing learning outcomes with the use of a pretest, posttest, and transfer task. This study provides empirical evidence to determine if learning outcomes change when comparing the use of a slide lecture to an unfolding case study in the classroom setting. A student perception survey was also utilized to evaluate the students’ opinion of this teaching strategy.
CHAPTER III: RESEARCH METHODOLOGY

This section of the dissertation will provide a detailed description of the research methodology that was utilized to conduct the study. The participants, materials, procedures, and measures are discussed in detail to clearly describe the research design.

Design

The purpose of this quantitative, cross cohort, intervention study was to compare the learning outcomes of a traditional slide lecture to an unfolding case study in undergraduate nursing students. An unfolding case study was utilized based on the combined principles of situated cognition and the learning sciences. The study compared two teaching strategies, an unfolding case study and a traditional slide lecture. Learning outcome measures were administered at three time intervals: pretest, posttest, and transfer test. The scores of the pretest, posttest, and transfer test were compared for the slide lecture and unfolding case study group. The participants completed a perception survey of the teaching session to evaluate their perception of the lecture or unfolding case study.

Setting

The study took place at a large, baccalaureate nursing program in the southeastern United States. The study occurred in a natural setting during the participants’ third semester of their upper division nursing courses, when they received their adult health content. The traditional slide lecture and unfolding case study covered the topic of burns. This topic was presented with the students’ integumentary lecture.
Participants

The participants included a nonrandom, convenience sample of undergraduate nursing students from a baccalaureate program. There were 83 participants in the lecture group and 98 participants in the UCS group. A total of 202 participants signed consent initially, however due to the lack of effort on test questions from 15 participants and missing data from 6, the total number of participants decreased to 181. For experimental research, a power analysis was utilized to determine the appropriate sample size. The power analysis calculation included the level of statistical significance or alpha, the amount of power desired in the study, and the effect size (Creswell, 2014). A G*power priori power analysis of a within-between 2x3 repeated measures ANOVA using an alpha of 0.5, effect size of 0.2, and a power of 0.95 revealed a needed sample size of 66 (Franz, Erdfelder, Lang, & Buchner, 2009).

Variables

The independent variable or treatment variable included the instructional condition. One group received the unfolding case study, while the other group received a traditional slide lecture. Other independent variables that were not manipulated included perceptions of participants. The participants’ self-reported grade point average, sex, and race were obtained in the student perception survey. The dependent variables included the test results that measured if learning occurred and which intervention, the traditional slide lecture or unfolding case, resulted in increased learning.

Materials

One group received a slide lecture presenting the material. The other group received the unfolding case study. Learning outcomes were measured with a pretest, posttest, and a transfer
test. The pre-class reading assignment, objectives, content, pretest questions, posttest questions, and transfer test was the same for each group.

**Pre-class Reading Assignment**

The slide lecture group and unfolding case study group received the same pre-class reading assignment. The students were instructed to read the burn chapter from their assigned text book for the course.

**Pretest**

The slide lecture group and unfolding case group also completed a pretest prior to the teaching session. The pretest assessed the students’ knowledge of burns prior to the learning experience. It consisted of seven multiple choice questions randomly selected from a pool of 15 questions (Appendix A). The questions aligned with the student learning outcomes and burn topic content. The questions were taken from test banks developed by the course text or published NCLEX review books. The questions were representative of what the students receive in their natural setting as preparation for their national licensure exam. The pretest questions were administered during the students’ first exam, which occurred two weeks prior to the burn lecture. The results of the questions were not calculated in the students’ exam grade and the students were made aware of this prior to the first exam. The questions were randomized for each participant.

**Slide Lecture**

The slide lecture group received a traditional slide lecture on the topic of burns in the fall of 2017. The students had access to the slides a week before the teaching session occurred. The burn lecture covered content including the pathophysiology of burn injuries, the changes that occur within each body system when a burn injury occurs, etiology of burns, classification of
burns, the rule of nines, phases of burn injury, priority nursing care during each phase, and calculation of fluid replacement. The lecture was developed after the following steps were taken by the researcher. First, the researcher reviewed a video recording of the previous semester’s burn lecture. The slides were available and were used to follow along with the recorded lecture. Next, the researcher read the burn chapter in the assigned medical-surgical nursing textbook. Detailed notes were taken during the second reading of the chapter. The researcher also discussed the challenges the students faced in previous semesters with the course leader. Previous test questions and scores were also reviewed. A literature review provided the most up-to-date articles published on nursing caring for burn patients. This information was compared to the textbook and adjustments were made to the lecture content. The slide lecture was developed based on the information gathered during this thorough review of burn content. Student learning outcomes were also developed at this time. The slide lecture was organized around major concepts of nursing care for burns. The presentation of the slide lecture engaged the three fundamental principles of learning. The lecture began with a review of the anatomy and pathophysiology of the integumentary system. This content is covered in a previous semester and was a review of prior knowledge. The lecture presented factual knowledge, but was also organized around big nursing concepts of burn patients. Lastly, practice multiple choice questions were included in the lecture to allow the student to self-assess their learning (NRC, 2005).

Table 1

*Sequence of Events for the Lecture (Control) Group*

<table>
<thead>
<tr>
<th>Pretest</th>
<th>Intervention</th>
<th>Posttest</th>
<th>Transfer Test</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 weeks before</td>
<td>Lecture</td>
<td>2 weeks after</td>
<td>5 weeks after</td>
</tr>
<tr>
<td>intervention</td>
<td>Survey</td>
<td>intervention</td>
<td>intervention</td>
</tr>
</tbody>
</table>

30
Unfolding Case Study

The unfolding case study group received an unfolding case study on a burn patient (Appendix B). The UCS was presented in the spring of 2018. The students had access to the unfolding case one week prior to the teaching session. The students also had access to the burn slide lecture in preparation for the teaching session. The students were instructed on the importance of reading the chapter and reviewing the slide lecture prior to the teaching session, so they would be able to participate in the unfolding case. Student learning outcomes were clearly identified at the beginning of the instructional session. The students were divided into small groups of 4-6 participants each. The unfolding case was presented to the entire class. After the designated section of information was presented, the students worked in their small groups to answer questions about the case study. The students were instructed to use the group discussion strategy, Think-Pair-Share. In this group discussion strategy, the students individually think about an issue, then discuss it in a small group, and finally share with the entire class (Herrman, 2016). This continued until the case ended and the teaching session was complete. Each group typed their answers into a document that was submitted after the teaching session. This counted as a portion of the students’ participation grade for the class session. The students completed an individual reflection assignment at the end of the case. This consisted of a short, two paragraph response that was included in the unfolding case study questions. The unfolding case study was obtained from Winningham’s Critical Thinking Cases in Nursing book (Harding & Snyder, 2016). The order of the case and some questions were adjusted to meet the student learning outcomes. The unfolding case was also compared to the slide lecture to ensure the same content would be covered by the researcher. The unfolding case included the necessary components described by Ulrich and Glendon (2005). The case contained three paragraphs with questions
after each paragraph. The reflective writing assignment guided students’ future learning needs and allowed reflection to deepen the learning experience. The case structure addressed the purpose of the case, biographical data, context, content, focused questions, cooperative-learning strategies, and a reflective writing assignment (Ulrich & Glendon, 2005). The students were given a copy of the instructor’s answers to the case after the teaching session.

Table 2

Sequence of Events for the Unfolding Case Study (Treatment) Group

<table>
<thead>
<tr>
<th></th>
<th>Pretest</th>
<th>Intervention</th>
<th>Posttest</th>
<th>Transfer Test</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 weeks before</td>
<td></td>
<td>Unfolding Case</td>
<td>1 week after</td>
<td>4 weeks after</td>
</tr>
<tr>
<td>intervention</td>
<td></td>
<td>Survey</td>
<td>intervention</td>
<td>intervention</td>
</tr>
</tbody>
</table>

Posttest

The posttest assessed the students’ knowledge of burns after the lecture. The posttest was administered during exam two and consisted of seven multiple choice questions randomly selected from a pool of 15 questions (Appendix A). The questions aligned with the student learning outcomes. The questions were taken from test banks developed by the course text or a published NCLEX review book. The questions were randomly selected from the same pool of 15 questions used for the pretest. The posttest was administered after the teaching session, and did not count towards the students’ grade.

Transfer Test

The transfer test assessed the students’ long-term retention of knowledge on the burn lecture or unfolding case. This occurred several weeks after the burn content was presented. The questions were taken from the test bank developed by the course text or a published NCLEX review book. It consisted of seven multiple choice questions randomly selected from the same
pool of 15 questions used in the pretest and posttest (Appendix A). These questions were administered during exam three and did not count towards the students’ grade.

**Student Perception Survey**

A student perception survey was administered after each teaching session (Appendix C). This evaluated the students’ perception of the teaching session. The survey was developed by the NLN (2012). The survey evaluates students’ personal attitudes about the instructional experience. The survey was slightly modified to change the word simulation to lecture or unfolding case study. Two additional questions were added to the survey to determine the students’ perception of the teaching experience as it relates to the clinical setting. The survey also asked the participants their self-reported grade point average, sex, and race.

**Procedures**

The researcher obtained IRB approval to conduct the study. The researcher also obtained permission from the educational institution where the study was performed. Informed consent was obtained from the participants (Appendix E). The data was extracted from the course data management system and exported to a spreadsheet. The students’ campus wide identification number (CWID) was used to collect the data. Data was stored on a password protected computer hard drive. This study was a quasi-experimental, consisting of non-randomly assigned participants to the traditional slide lecture or unfolding case study group.

**Data Collection**

Data collection was obtained from the pretest, posttest, and transfer test. These evaluations were administered via the institutions course management system, Blackboard. The case study group answers and reflection were turned in via Blackboard. The student satisfaction survey was administered via Qualtrics.
Data Analysis

Statistical analysis of the quantitative data of the study was performed using the Statistical Package for the Social Sciences (SPSS). Descriptive statistics included the mean, standard deviations, and sample size. Differences in learning outcomes between the lecture group and UCS group were analyzed via a repeated measure 2x3 Analysis of Variance (ANOVA). The interaction between group (slide lecture; unfolding case study) and time (pretest; posttest; transfer test) was used to determine the difference between the unfolding case study and lecture group. After the lecture teaching session occurred, several students voiced to their teacher that they did not make any effort on the posttest or transfer test since it did not count toward their final grade. Due to this, the researcher created a post-lecture survey in which 76 students responded. Out of those who responded, 15 stated they did not make any effort on the research test questions. Therefore, those 15 students’ responses were removed from the data set, leaving 83 participants from the lecture group. The perception survey was analyzed using a one-way ANOVA comparing the slide lecture group to the UCS group.
CHAPTER IV:

RESULTS

This chapter provides an overview of the purpose, research questions, and results of the study. A discussion will follow each research question including an explanation of the findings of the research.

Overview

The purpose of this quantitative study was to examine the effects of an UCS on undergraduate nursing students learning outcomes. This intervention study compared a traditional slide lecture to an UCS by testing learning outcomes with the use of a pretest, posttest, and transfer test. Percentage scores were utilized to depict the number of questions answered correctly on the pretest, posttest, and transfer test. Each test consisted of seven multiple choice questions randomly selected from the same pool of 15 questions. A student perception survey was also administered after each teaching session. The study proposed the following research questions:

1a. Does the utilization of an unfolding case study increase nursing students’ learning outcomes?

1b. Does the utilization of an unfolding case study increase nursing students’ learning outcomes more than traditional lecture methods?

2a. Does the utilization of an unfolding case study promote knowledge transfer?

2b. Does the utilization of an unfolding case study promote knowledge transfer more than traditional lecture methods?
3. Do students recognize the connection between a classroom-based unfolding case study and clinical practice?

Quantitative Analysis of the Data

Overview of Initial Findings

Research questions 1 and 2 were addressed using a 2 x 3 repeated measures ANOVA framework. The condition (slide lecture; unfolding case study) by time (pretest; posttest; transfer test) interaction was used to determine the differences between the lecture and UCS groups. All assumptions of the ANOVA were satisfied. Maulchy’s Test of Sphericity indicated that the assumptions of sphericity were not violated, $\chi^2(2) = 1.50, p = .474$; the within subject variances were equal. The ANOVA tested whether a significant main effect and interaction effect were present. Results indicated a statistically significant p-value for main effect of time (pretest, posttest, transfer test), $F(2, 178) = 23.71, p < .001$, partial $\eta^2 = .210$. Given the significant main effect, post-hoc pairwise comparisons were used to address research question 1a and research question 2a. No interaction effect was found for time by condition, $F(2, 178) = 1.83, p = .164$, partial $\eta^2 = .020$. Given the non-significant interaction effect, post-hoc pairwise comparisons were not needed to address research question 1b and 2b. However, for purposes of precision and clarity, the results will be included in the discussion below.

Descriptive Statistics

The slide lecture participants started with lower pretest scores than the UCS participants (Table 3). The posttest scores revealed similar results from both groups with a mean of 4.1 in the lecture group and 4.2 in the UCS group. The lecture group had a relative increase of 15% on the posttest and the UCS group had a relative increase of 9%, however neither group scored at a passing rate of 75%. The attrition from posttest to transfer test in both groups occurred at a
relative decrease of 12% in the lecture group and 6% in the UCS group. See Figure 1 for a graphical representation of performance of the lecture and UCS groups.

Table 3

**Pretest, Posttest, and Transfer Descriptive Statistics and Group Differences between Lecture and Unfolding Case Study Groups (N = 181)**

<table>
<thead>
<tr>
<th>Condition</th>
<th>Time</th>
<th>n</th>
<th>M</th>
<th>SD</th>
<th>%Correct</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lecture</td>
<td>Pretest</td>
<td>83</td>
<td>3.05</td>
<td>1.34</td>
<td>44</td>
</tr>
<tr>
<td></td>
<td>Posttest</td>
<td></td>
<td>4.10</td>
<td>1.40</td>
<td>59</td>
</tr>
<tr>
<td></td>
<td>Transfer</td>
<td></td>
<td>3.30</td>
<td>1.29</td>
<td>47</td>
</tr>
<tr>
<td>UCS</td>
<td>Pretest</td>
<td>98</td>
<td>3.54</td>
<td>1.30</td>
<td>51</td>
</tr>
<tr>
<td></td>
<td>Posttest</td>
<td></td>
<td>4.20</td>
<td>1.31</td>
<td>60</td>
</tr>
<tr>
<td></td>
<td>Transfer</td>
<td></td>
<td>3.80</td>
<td>1.14</td>
<td>54</td>
</tr>
<tr>
<td>Overall Group</td>
<td>Pretest</td>
<td>181</td>
<td>3.31</td>
<td>1.34</td>
<td>47</td>
</tr>
<tr>
<td></td>
<td>Posttest</td>
<td></td>
<td>4.15</td>
<td>1.35</td>
<td>59</td>
</tr>
<tr>
<td></td>
<td>Transfer</td>
<td></td>
<td>3.57</td>
<td>1.23</td>
<td>51</td>
</tr>
</tbody>
</table>

*Figure 1.* Pretest, posttest, and transfer test scores for lecture and unfolding case study groups.
Research Question 1a

Does the utilization of an unfolding case study increase nursing students’ learning outcomes?

Hypothesis 1a

H₀: There is no statistical difference in the pretest and posttest scores in the unfolding case study group.

H₁: The unfolding case study group will have statistically significant higher posttest scores compared to pretest scores.

Research Question 1a was tested using a post-hoc within subjects contrast between pretest and posttest of UCS group. This test was warranted, given the significant main effect found in the 2 x 3 Repeated Measures ANOVA reported previously. Results indicated a statistically significant increase in scores from pretest to posttest, $F(1, 179) = 43.1$, $p < .001$, $\text{partial } \eta^2 = .194$. In other words, students performed better on the posttest than the pretest. This increase was to be expected given time and instruction. Based on these results, one must reject the null hypothesis, as students in the unfolding case study group had significantly higher posttest scores compared to the pretest, indicating learning outcomes did improve at a statistically significant rate. The next research question asks whether this increase over time was the same as or more than the increase over time compared to the lecture group.

Research Question 1b

Does the utilization of an unfolding case study increase nursing students’ learning outcomes more than traditional lecture methods?

Hypothesis 1b

H₀: There is no statistical difference in the rate of change between the lecture and unfolding case study group.
H1: The unfolding case study group will have a statistically significant higher rate of change than the lecture group.

Research question 1b was tested using a post-hoc within subjects contrast of the interaction effect between the pretest and posttest scores of the UCS and lecture groups. This test was not warranted given the non-significant interaction effects found in the 2 x 3 repeated measures ANOVA reported above. However, for purposes of precision and clarity, the results are reported below. Post-hoc tests of within-subject contrasts revealed no statistically significant interaction between the pretest and posttest by condition $F(1, 179) = 2.33, p = .129$, partial $\eta^2 = .013$, meaning the rate of learning between the UCS and lecture group was not statistically different. Based on these results one must accept the null hypothesis, as students in the unfolding case study group did not score statistically higher than those in the lecture group.

In summary, both the lecture and UCS group had significantly increased posttest scores within each group, but there was no significant difference found between each groups’ posttest scores. Based on this finding, it can be argued that an UCS or slide lecture are comparable teaching strategies. The next research question will address transfer of knowledge.

**Research Question 2a**

Does the utilization of an unfolding case study promote knowledge transfer?

**Hypothesis 2a**

H$_0$: There is a statistically significant decrease from the posttest to transfer test scores in the unfolding case study group.

H$_1$: There is not a statistically significant decrease from the posttest to transfer test scores in the unfolding case study group.
Research question 2a was tested utilizing a post hoc test of within-subject effects between posttest and transfer test of the UCS group. This test was warranted given the significant main effect found in the 2 x 3 repeated measures ANOVA reported previously. Results indicated a statistically significant decrease in scores from posttest to transfer test, $F(1, 179) = 24.4, p < .001$, $\text{partial } \eta^2 = .120$. Based on these results one must accept the null hypothesis, as students’ scores in the unfolding case study group decreased significantly from the posttest to the transfer test. The relative decrease in scores on the transfer test in the UCS group was 6%. This supports the conclusion that transfer of learning did not occur, as the performance decreased significantly on the transfer test. The transfer test was given four to five weeks after the students received the teaching intervention. For transfer to occur, the transfer test scores would have been similar to the posttest scores or decreased slightly, but not at a significant rate. Nursing education should strive to have students score similarly on the posttest and transfer test, which would indicate that the students retained the information taught initially.

**Research Question 2b**

Does the utilization of an unfolding case study promote knowledge transfer more than traditional lecture methods?

**Hypothesis 2b**

$H_0$: There is no statistical difference in the rate of change between the slide lecture and unfolding case study group.  

$H_1$: The unfolding case study group will have a statistically significant lower rate of change than the lecture group.

Research question 2b was tested using a post hoc test of within-subject interaction effects. This test was not warranted given the non-significant interaction effect found in the 2 x 3
repeated measures ANOVA reported above. However, for purposes of precision and clarity, the results are reported below. Test results revealed no significant interaction effect with a decrease from posttest to transfer test scores in both the lecture and UCS group, $F(1, 179) = 3.01, p = .084$, partial $\eta^2 = .017$. Based on these results, one must accept the null hypothesis as there was no statistical difference in the rate of change between the slide lecture and unfolding case study group.

In summary, both groups improved at a statistically significant rate on the posttest, but also worsened at a statistically significant rate on the transfer test. The primary goal of nursing education is to prepare nursing students to practice as novice professional nurses upon graduation. Nursing education begins in the classroom setting and slowly progresses to the clinical setting. When comparing the lecture group to the UCS group, there was not a significant difference in test scores. The highest mean test score was the UCS posttest resulting at 60%. The standard passing requirement set by the nursing school this study was performed at is a required average score of 75% on combined exams. Based on these results, the UCS and lecture are at least comparable teaching strategies, although neither revealed transfer of knowledge, which should be the primary goal of nursing education.

**Research Question 3**

Do students recognize the connection between a classroom-based unfolding case study and clinical practice?

**Hypothesis 3**

$H_0$: There is no statistical difference in the students’ recognition of the connection between a classroom based unfolding case study and clinical practice.
H1: The unfolding case study group will have a statistically significant higher recognition of the connection between a classroom based unfolding case study and clinical practice.

A one-way ANOVA was conducted to evaluate the perception survey given to each group after the teaching session was complete. The independent variable was instruction group (unfolding case study group and lecture group). The dependent variables included the students’ perception about the reading assignment and the students’ perception about the teaching session. Question one asked the students if the reading assignment prior to the teaching session prepared them for clinical practice. Question two asked the students if the teaching session (lecture or UCS) prepared them for clinical practice.

Results indicated that students perceived the teaching session as more authentic than the reading assignment $F(1,358) = 11.03, p = .001, \text{partial } \eta^2 = .030$. However, student responses on the perception questions did not vary by method type (UCS or lecture) $F(1,358) = .514, p = .474, \text{partial } \eta^2 = .001$. Digging deeper, 95% confidence intervals (CI95) revealed that the difference is found in the lower perceptions of the readings from students in the lecture group (Table 4). The reading assignment for both groups was identical, however, the lecture group rated the reading as less authentic than either the lecture or the UCS lesson. Given the results, we cannot reject the null hypothesis. Students did not see a greater connection between the authenticity of an UCS with clinical practice.
Table 4

Descriptive Statistics and Group Differences between Lecture and Unfolding Case Study Groups on the Perception Survey

<table>
<thead>
<tr>
<th>Question</th>
<th>Condition</th>
<th>N</th>
<th>M</th>
<th>SD</th>
<th>CI95</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reading</td>
<td>UCS</td>
<td>94</td>
<td>5.11</td>
<td>1.63</td>
<td>[4.82, 5.39]</td>
</tr>
<tr>
<td></td>
<td>Lecture</td>
<td>87</td>
<td>4.78</td>
<td>1.26</td>
<td>[4.48, 5.08]</td>
</tr>
<tr>
<td></td>
<td>Overall Reading</td>
<td>181</td>
<td>4.95</td>
<td>1.47</td>
<td></td>
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<tr>
<td>Teaching</td>
<td>UCS</td>
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<td>5.38</td>
<td>1.63</td>
<td>[5.10, 5.67]</td>
</tr>
<tr>
<td></td>
<td>Lecture</td>
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<td>5.49</td>
<td>1.00</td>
<td>[5.20, 5.79]</td>
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<tr>
<td></td>
<td>Overall Teaching</td>
<td>181</td>
<td>5.44</td>
<td>1.36</td>
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</tbody>
</table>

Field Observation Notes

The collection of field observation notes was not originally presented at the study proposal. However, field observation notes on student interactions were collected by the researcher and two other observers during the unfolding case study teaching session. Field observation notes were collected to enrich the findings of the study by providing data on the interactions of the student groups during the unfolding case study teaching session. The room was divided into three zones: A, B, and C. The three observers rotated through each zone spending approximately ten minutes in each zone during the students group discussion after each scenario of the UCS was presented. The observation collection form was divided into three sections labeled task, nursing knowledge, and clinical decision making. Task was defined as the student trying to complete the assigned task. Nursing knowledge was defined as discussing facts and nursing care for the burn patient. Clinical decision making was defined as the student making clinical nursing decisions similar to what might occur in the clinical setting. Fifteen total clinical groups were observed, with six to eight students per clinical group. The groups were further divided to decrease the numbers from eight to four to six students per group. The further division of the clinical groups resulted in a total of 27 groups being observed.
Students were observed attempting to complete the task of the unfolding case study. Observations revealed students discussing the patient case. Some students were seen working individually on the case and not with their clinical group. Groups that were engaged with each other had a student leader that took charge of answering the case study questions. Some groups divided the work, and one group asked the teacher about using a google doc to document their answers simultaneously. Students were unsure of where to find the answers to the case study. One student asked, “Do we google this?,” and another student was observed looking through the previous semester’s PowerPoint lecture to find the answers. Another student asked a group member, “Where are we supposed to find those answers?” Students located along the walls and near the isles were less engaged. Some students were not participating at all and were observed on their cell phone, using Quizlet, studying for a test, and texting. One student was noted leaving class early to meet her food delivery driver for lunch.

The use of nursing knowledge was observed when students used previous lecture slides to calculate the burn injury. Students were prioritizing nursing care based on the urgency of the patient need. Students also looked up normal lab values to determine if the patient in the case study had normal or abnormal lab values. One group began reading the scenario aloud to emphasize key assessment findings and how to prioritize assessment of a burn injury. Other students discussed nursing assessment techniques. Students calculated the patient’s hourly urine output. One group was noted using nursing knowledge related to effects on vital signs.

Clinical decision-making skills were observed when students determined if the patient in the case needed referral to a burn center based on the total body surface area burned. One student shared a story about a clinical experience with her case study group. One group discussed what
the patient would likely need next in their patient care. One group discussed lab values and determined “it could be caused by fluid overload.”

Additional observation notes during the teacher-led case study discussion revealed that the majority of students were engaged and taking notes, with the occasional student noted to be on Facebook or shopping on the internet. The teacher facilitated discussion on types of burns in response to a multiple-choice question. Toward the end of the teaching session, the students seemed hesitant to answer the case study questions, even though they had the correct answer. During case study question two, one student answered correctly and provided an engaging response with the instructor. Another student answered the question incorrectly, but the teacher did not make her feel shame. The teacher used this opportunity to clarify content. During the end of the teaching session, students were hesitant to engage and answer case questions.

This observation data validates the importance of classroom design. The students were placed in their clinical groups to simulate the interaction of being in the clinical setting. The design of the classroom and layout of the seats was not conducive to group learning. During the observations, it was noted the students on the outside of the rows were not interacting as much when compared to those in the middle seats. The students were also unfamiliar with this interactive teaching strategy and expressed confusion about the expectations of the learning experience. The information collected during the observations could provide guidance on how to best structure an unfolding case study with a large group of students for future interactive learning strategies.

**Summary**

This chapter discussed the results of the research study. Descriptive statistics were utilized to describe the overall characteristics of the participation of the study. Inferential
statistics included a Repeated Measures ANOVA for the pretest, posttest, and transfer test scores. A one-way ANOVA was utilized to evaluate the perception survey.

The Repeated Measures ANOVA revealed no significant difference between the unfolding case study group and the lecture group based on test score results. Both groups performed similarly and neither did well on the transfer test. The one-way ANOVA revealed that both groups felt their teaching session was more closely related to the clinical environment when compared to the reading, but the unfolding case study group did not have significantly higher responses compared to the lecture group.
CHAPTER V: DISCUSSION, RECOMMENDATIONS, AND CONCLUSIONS

A quantitative, cross-cohort, intervention study was conducted to examine the effects of an unfolding case study on undergraduate nursing students learning outcomes. This study addressed the challenge to improve teaching and learning strategies by integrating clinical experiences into classroom education (Benner et al., 2010; IOM, 2011). Learning outcomes were assessed using a pretest, posttest, and transfer test with each teaching session. A student perception survey was also administered after each teaching session. Observation notes were recorded during the unfolding case study teaching session. A 2 x 3 repeated measures ANOVA analyzed the condition (slide lecture; unfolding case study) by time (pretest; posttest; transfer test) to address research questions 1 and 2. A one-way ANOVA addressed research question 3.

The study proposed the following research questions:

1a. Does the utilization of an unfolding case study increase nursing students’ learning outcomes?

1b. Does the utilization of an unfolding case study increase nursing students’ learning outcomes more than traditional lecture methods?

2a. Does the utilization of an unfolding case study promote knowledge transfer?

2b. Does the utilization of an unfolding case study promote knowledge transfer more than traditional lecture methods?

3. Do students recognize the connection between a classroom-based unfolding case study and clinical practice?
The results of the study did not find statistically significant evidence to support that an UCS increases nursing students’ learning outcomes more than a traditional slide lecture. The results of the study indicated that students in each teaching group (lecture; UCS) performed similarly on their posttest and transfer test. Both groups had statistically significant improvement from pretest to posttest scores, as well as statistically significant worsening scores from posttest to transfer test. Based on these results, the learning outcomes of each teaching strategy was similar in comparison and neither strategy resulted in adequate transfer test scores. The survey results revealed that students recognized that each teaching session (slide lecture; unfolding case study) was more closely aligned with clinical practice compared to the reading assignment; however, there was no significant difference found between the lecture and UCS group. This chapter will discuss the findings of the study in relation to the current literature, limitations of the study, and recommendations for future research.

**Effects of Unfolding Case Study on Learning Outcomes**

Applying situated cognition and principles from the learning sciences provided a theoretical framework that aligned the classroom and clinical learning environments. Situated cognition has been utilized as a learning framework in nursing education with positive learning outcomes in several nursing studies (Gieselman et al., 2000; Himes & Ravert, 2012; Paige & Daley, 2009). The learning sciences is an interdisciplinary collaboration resulting in a synthesis of several decades of research on thinking and learning (Sawyer, 2006). Conceptually, an UCS combines the principles of situated cognition and the learning sciences by providing more authentic, contextualized classroom learning that encourages the student to think like a nurse, while utilizing foundational principles of learning to increase effectiveness of teaching.
Therefore, it was reasonable to hypothesize that utilizing an unfolding case study in the classroom setting would produce better learning outcomes than a traditional slide lecture.

However, this study found no difference in learning outcomes, between the UCS and lecture groups. The results of this study differ from two previous quantitative studies, one of which reported improved learning outcomes with UCS (McCormick et al., 2013), and the other reported decreased learning outcomes with UCS (Carter & Welch, 2016).

Additional research is needed to explore these mixed findings. One potential reason for mixed findings is the teaching environment, a controlled simulation lab versus an open classroom environment. McCormick et al. (2013) conducted their study in a simulation lab during a health assessment course. The simulation lab provides a controlled, specialized learning environment with smaller groups of students and more instructors. Also, teaching health assessment on one body system covers one specific part of the nursing process compared to teaching a topic on burns, which covers the entire nursing process. Carter and Welch (2016) compared two different semesters of students taking classes on different campuses. Their UCS covered the topic of renal and musculoskeletal content. Covering this amount of content in one teaching session could have affected their results. Although the UCS group in this study did not outperform the lecture group, the groups weren’t different either. This provides evidence that nurse educators could explore alternative instructional strategies in nursing pedagogy.

Development of nursing curriculum that creates engaging interactions with the learner answers the call for education reform that Benner et al. (2010) and the IOM (2011) identified.

Effects of Unfolding Case Study on Transfer

Transfer is the ability to take the information learned in one area and apply it to another. The primary goal of learning is for transfer. Nurse educators spend hours in the classroom setting
teaching nursing content that is expected to be applied in the clinical setting. There were no nursing studies found in the literature that evaluated transfer of knowledge with the use of an UCS in the classroom setting. A qualitative study found improved knowledge retention of nursing students after a simulation experience (Botma, 2014). Transfer has been studied in other academic areas. An online information literacy course compared situated learning to traditional instruction with the use of a pretest, posttest, and transfer test. Study results revealed transfer occurred more often in the situated learning group (Catalano, 2015).

The data from this study revealed students’ scores in both the UCS and lecture groups decreased on the transfer test, indicating neither method was very effective for long-term retention of knowledge. This study adds to the literature by providing learning outcomes data evaluating transfer of knowledge in nursing students taught with lecture and UCS in the classroom setting. This provides evidence that nursing education needs more research on transfer of knowledge to evaluate long-term retention of information taught to nursing students. The purpose of nursing education is to prepare novice nurses to practice safely in the clinical setting. If nursing students are not retaining the information taught in the classroom or if they are unable to apply the information in the clinical setting, this could lead to negative patient outcomes. Although the UCS results did not reveal evidence of transfer, the learning outcomes were not any different from the lecture group. Again, this emphasizes that nurse educators could explore other teaching strategies without sacrificing student learning outcomes to address the call for nursing education reform (Benner et al., 2010; IOM, 2011).

**Students’ Connection of Unfolding Case Study to Clinical Practice**

The literature review revealed several qualitative studies that looked at the students’ experience with this teaching strategy. Studies found that students enjoyed this teaching strategy.
Students felt like they learned a lot and that the experience prepared them for the clinical setting (Kopka et al., 2016; Mills et al., 2014; Moyer, 2016).

The results of this study revealed that both groups identified the classroom activity as more closely related to the clinical setting when compared to the reading. However, when comparing the groups’ (UCS; lecture) responses with each other, there were no significant differences noted, meaning the UCS group did not recognize the connection between a classroom-based UCS and clinical practice at a higher rate when compared to a slide lecture. Upon further review of the 95CI, a difference was noted in the lecture group, who rated the reading score lower than the lecture or UCS lesson.

Some noted differences in this study compared to previous studies include the lack of comparing the UCS to another teaching strategy. Also, some of the previous studies used the UCS in conjunction with simulation and over a semester time period or on more than one occasion. The UCS and lecture group received the same reading assignment, however the lecture group rated the reading as less authentic than the UCS group. The study results bring up an important point about using student perceptions as a driving force to influence nursing pedagogy. As educators, should we not focus on cognition rather than perception? Nurse educators should strive to provide a positive learning experience, but strictly focusing on student perception provides no insight into how much learning actually occurred.

**Limitations of the Study**

There are some limitations of this study that should be discussed. First, the use of a convenience sample of baccalaureate nursing students from one college in the southeastern United States limits generalizability of the finding to other colleges or regions. This was an
intervention study that took place in a naturalistic setting. Ideally, a study like this would be conducted at several institutions using a diverse student population.

Secondly, the UCS was presented in one single class covering one topic of nursing care. Ideally, the effects of an UCS would be evaluated over the length of a semester or more, while covering several nursing topics.

Lastly, the researcher was a guest lecturer in this study. The students were unfamiliar with this teaching method and had no previous experience with UCS. The students were unsure of the expectations of the teaching session. They also did not feel obligated to make real effort on the test questions.

**Implications for Nurse Educators**

The study evaluated the effects of utilization of an unfolding case study on students’ understanding and ability to transfer concepts related to care of a burn patient. Analysis of the data revealed that posttest scores improved in the lecture and UCS group. Both groups’ transfer test scores also worsened when compared to posttest scores. The findings of this study have the potential to guide the design of learning environments as well as nursing education pedagogy. The findings will be shared with the institution as well as generalized to other nursing programs. These implications will be discussed within this section.

The results of this study reveal that an UCS and slide lecture are comparable teaching strategies, when comparing learning outcomes based on multiple-choice questions. Both groups performed similarly on the posttest and transfer test. These findings did not validate the researcher’s hypothesis that the students would have a deeper level of learning with the UCS compared to the slide lecture. However, the results do reveal that an UCS is as effective as a slide lecture and aligns more closely with foundational learning principles. Therefore, this
teaching strategy could be utilized more in the future. This provides the evidence for nurse educators to explore alternative teaching strategies in the classroom setting. In my experience, nursing educators continue to use slide lecture presentations for the purpose of covering large amounts of information in short amounts of time. The study results indicate that an UCS could be used with similar results of a slide lecture while also meeting the call for education reform made by Benner et al. (2010) and the IOM (2011).

One of the most significant findings of this study was that both groups’ test scores decreased significantly on the transfer test. This is a significant finding because the primary goal of nursing education is to produce competent novice nurses. Teaching strategies that improve long-term retention of knowledge will help accomplish this goal more effectively. This finding is consistent with nursing research that called for classroom reform to address the challenges identified by IOM (2011) and Benner et al. (2010). Nursing education needs to continue to study this topic to find more effective ways to teach in the classroom setting.

The observation data collected in this study highlights the importance of classroom design. The classroom was a large lecture hall with rows of desks that face the front of the classroom. During the group work, the students sitting closest to the isles were isolated and could not interact easily with those sitting in the middle of the rows. The students were also unfamiliar with this teaching strategy. Several students voiced concerns about how to find the answers to the UCS questions during the group work. Some students voiced their lack of effort on the burn test questions since the tests did not count towards their final grade. Lastly, students have performed poorly in the past on the burn content, indicating this is difficult material for the students to grasp.
Recommendations for Future Research

The research study examined the effects of an unfolding case study on students’ learning outcomes on the nursing care of burn patients. The results of the study reveal a further need for research in the areas of classroom design, interactive teaching strategies, transfer, and measurement of learning outcomes.

The observation field notes revealed challenges in the participation of group members during the unfolding case study discussion questions. Using this interactive teaching strategy might be better suited for smaller classes as well as using classrooms better suited for group work. An unfolding case study might be more effective in the clinical setting, during simulation, or in the clinical practice lab. In these settings, the students are in smaller groups of six to eight students and have the ability to work together in a more cohesive environment.

One very important result of the study revealed that both groups of students performed statistically worse on the transfer test. This reiterates the importance of studying transfer. If the nursing student does not retain the knowledge learned in the classroom, he or she will not perform well in the clinical setting. This could have a negative impact on patient care and safety. Nursing education needs to evaluate transfer of knowledge in further studies to determine the best classroom methods in preparing the future nurse.

Another consideration for future studies is to use a different evaluation method other than multiple-choice testing. Multiple-choice questions were used to evaluate the students in this study because this is similar to The National Council Licensure Examination (NCLEX), which uses multiple choice questions to test the student’s competency to gain his or her nursing license. The institution this study was performed at also uses multiple choice questions to evaluate their students. Setting up a study that allows the student to perform nursing care on a patient after
participating in an unfolding case study might align better with this interactive teaching strategy. Utilizing unfolding case studies throughout the semester as well as in other settings such as the clinical settings, clinical practice lab, and simulation might also add to the learning experience for the students. Another consideration is to classify the multiple-choice questions based on Bloom’s taxonomy for the cognitive domain and evaluate the students learning outcomes based on the question type they answered correctly.

**Conclusion**

In closing, the goal of this research study was to examine the effects of an unfolding case study on student learning outcomes on nursing care of the burn patient. In the nursing literature, there is a limited amount of quantitative studies evaluating understanding and none that evaluate transfer after implementation of an UCS in the classroom setting (Carter & Welch, 2016; McCormick, Romero, & Fuller, 2013). The study results revealed that an unfolding case study and a traditional slide lecture are comparable teaching strategies indicating that an UCS could be used with similar results of a slide lecture while also meeting the call for education reform made by Benner et al. (2010) and the IOM (2011). The results also provide evidence that nursing education needs to focus on long-term retention of knowledge as both teaching strategies failed to promote transfer of knowledge. Improving nursing education in the classroom could improve the lives of patients in the clinical setting.
REFERENCES


Burn Test Questions

Burn Lecture SLO

By the end of the burn teaching session, the student will:

1. Describe the pathophysiology of a burn, and the body’s physiological response to a burn for the integumentary, vascular, cardiac, pulmonary, GI, metabolic, and immunologic systems.
2. List 5 causes of burns.
3. Compare and Contrast the classification of burn depth injury.
4. Discuss patient teaching on burn prevention and safety.
5. Using the rule of nines, calculate the total body surface area on a burn victim.
6. Determine if a burn victim needs referral to a burn care center.
7. Discuss the 3 phases of a burn injury: including the time frame of each phase and the priorities of nursing care needed for each phase.
8. Using the Parkland Formula, calculate the patients IV fluid resuscitation amount and IV fluid rate for the first 24 hours.
9. List 5 home care needs to address for burn patients before discharge.
10. Formulate a nursing care plan for a burn victim for one priority concept such as tissue integrity, infection, pain, fluid and electrolytes, perfusion or nutrition.

Burn Questions For Assessing Student Learning Outcomes:

1. A patient is admitted to your unit with the following burn areas: entire left arm, anterior chest, and anterior face and neck. Using the rule of nines, calculate the % TBSA burned.
   
   A. 20%
   B. 31.5%
   C. 27%
   D. 49.5%

   • Answer: B
   • Rationale: Rule of nines: left arm = 9%, Anterior chest = 18%, anterior face and neck = 4.5%. Total = 31.5%
   • Source: CCN Test bank
   • SLO 5

2. The client who is burned on the upper chest and face is now coughing and complaining of coughing up “black, sooty particles”. Which action should the nurse take first?

   A. assess the level of consciousness and pupillary reaction
   B. Notify the physician immediately
   C. Obtain the client oxygen saturation
   D. auscultate breath sounds over trachea and mainstem bronchi
3. A client presents to the hospital at 0400 with burns to his/her entire left leg, entire left arm, and anterior chest. The injury occurred at 0200. The client weighs 165 lbs. You are initiating IV fluids at 0500. Using the Parkland formula, what rate will you administer the IV fluids at for the first 8 hours?

- Answer: 1350 Ml/hr
- Rationale: You need to convert lbs to kg, so 165 lbs = 75 kg. You need to determine the % TBSA burned using the rule of nines: entire left leg = 18%, entire left arm = 9%, anterior chest = 18%, so the TBSA = 45%.
  - The Parkland formula is 4 Ml/kg/%TBSA. 4 x 75 x 45 = 13,500. The client needs 13,500 Ml of fluids in the first 24 hours post burn. Half of the calculated fluid replacement needs to be administered during the first 8 hours after injury. So, 13,500 divided by 2 = 6,750. 6, 750 Ml of fluid needs to be administered during the first 8 hours. The injury occurred at 0200. You are hanging the fluids at 0500. Your first 8 hours is up at 1000, so you only have 5 more hours to get the fluids in. 6,750 divided by 5 = 1,350 Ml/hr.
- Source: CCN test bank
- SLO: 5 & 8

4. A client is brought to the emergency department by an ambulance after being burned with unknown chemicals. The client’s body is covered with a white, powdery substance, and the client cries out, “Get this stuff off of me! It’s burning me!” Which action by the nurse is most appropriate?

- A. Have the client take a shower and bag all clothing.
- B. Brush the substance off the client and remove the clothes.
- C. call poison control to identify the chemical.
- D. start an IV line and administer analgesics.

- Answer: B
- Rationale: With a chemical powder, the first step is to brush it off the skin.
- Source: CCN test bank
- SLO: 2

5. p. 485, Safe and Effective Care Environment
Which action by the nurse changing the dressings on the client who has burns on the right arm, the left arm, and the upper chest is most effective at preventing auto-contamination?
A. Changing gloves after cleaning and dressing one wound area before cleaning and dressing the next wound area.
B. Using sterile gloves to remove the old dressings and changing to fresh sterile gloves before applying the new dressings.
C. Ensuring that the blood pressure cuff used on another client is thoroughly cleaned before using it on this client.
D. Warning the client’s family not to bring fresh fruit and vegetables or house plants into the client’s environment.

- Answer: A
- Rationale: Auto-contamination is the movement of organisms from one body area on a client to another body area. The use of sterile versus clean gloves for routine wound care varies by agency and is a matter of debate. Regardless of sterility, change gloves when handling wounds on different areas of the body and between handling old and new dressings. So, if the nurse changed to fresh gloves after removing old dressings but kept the fresh gloves on while dressing all the burn wound areas, he or she greatly increases the risk for translocating organisms from one burn wound to another, resulting in auto-contamination. Responses C and D address cross-contamination that occurs between people.
- Source: med-surg book
- SLO: 7

6. The nurse is caring for a client with burns to the face. Which statement by the client requires further evaluation by the nurse?
   A. “I am getting used to looking at myself.”
   B. “I don’t know what I will do when people stare at me.”
   C. “I know that I will never look the way I used to, even after the scars heal.”
   D. “My spouse does not stare at the scars as much now as in the beginning.”

- Answer: B
- Rationale: The statement about not knowing what to do when people stare indicates that the client is not coping effectively; the nurse should assist the client in exploring coping techniques. Visits from friends and short public appearances before discharge may help the client begin adjusting to this problem. The statement that the client is getting used to looking at himself or herself, the realization that he or she will always look different than before, and stating that the client’s spouse doesn’t stare at the scars as much all indicate that the client is coping effectively. Community reintegration programs can assist the psychosocial and physical recovery of the client with serious burns.
- Source: evolve website student resources
- SLO: 7

7. Several clients have been brought to the emergency department after an office building fire. Which client is at greatest risk for inhalation injury?
   A. Middle-aged adult who is frantically explaining to the nurse what happened
   B. Young adult who suffered burn injuries in a closed space
C. Adult with burns to the extremities
D. Older adult with thick, tan-colored sputum

- **Answer:** B
- **Rationale:** The client who suffered burn injuries in a closed space is at greatest risk for inhalation injury because the client breathed a greater concentration of confined smoke. Clients who experienced a fire typically have some type of respiratory distress. However, the client talking without difficulty demonstrates minimal respiratory distress. Extensive burns to the hands and face, not the extremities, would be a greater risk. Sputum would be carbonaceous, not tan, if the client had suffered inhalation injury.

- **Source:** evolve website student resources
- **SLO:** 1, 7, 9

8. A newly admitted client has deep partial-thickness burns. The nurse expects to see which clinical manifestations?

A. Painful red and white wounds
B. Painless, brownish yellow eschar
C. Painful reddened blisters
D. Painless black skin with eschar

- **Answer:** A
- **Rationale:** A painful red and white wound bed characterizes deep partial-thickness burns; blisters are rare. Painless, brownish yellow eschar characterizes a full-thickness burn. A painful reddened blister is seen with a superficial partial-thickness burn. Painless black skin with eschar is seen in a deep full-thickness burn.

- **Source:** evolve website student resource
- **SLO:** 1, 3

9. The nurse is evaluating the effectiveness of fluid resuscitation for a client in the resuscitation phase of burn injury. Which finding does the nurse correlate with clinical improvement?

A. Blood urea nitrogen (BUN), 36 mg/Dl
B. Creatinine, 2.8 mg/Dl
C. Urine output, 40 mL/hr
D. Urine specific gravity, 1.042

- **Answer:** C
- **Rationale:** Fluid resuscitation is provided at the rate needed to maintain urine output at 30 to 50 mL/hr or 0.5 mL/kg/hr. A BUN of 36 mg/Dl is above normal, a creatinine of 2.8 mg/Dl is above normal, and a urine specific gravity of 1.042 is above normal.

- **Source:** evolve website student resources
- **SLO:** 7, 10

10. Which assessment is the nurse’s **highest** priority in caring for a client in the acute phase of burn injury?

A. Bowel sounds
B. Muscle strength
C. Signs of infection  
D. Urine output

- Answer: C  
- Rationale: The client with burn injury is at risk for infection as a result of open wounds and reduced immune function. Burn wound sepsis is a serious complication of burn injury, and infection is the leading cause of death during the acute phase of recovery. Assessing bowel sounds, assessing muscle strength, and assessing urine output are important but not the priority during the acute phase of burn injury.

- Source: evolve website student resources  
- SLO: 7

11. Which clinical manifestation is indicative of wound healing for a client in the acute phase of burn injury?
   A. Pale, boggy, dry, or crusted granulation tissue  
   B. Increasing wound drainage  
   C. Scar tissue formation  
   D. Sloughing of grafts

- Answer: C  
- Rationale: Indicators of wound healing include the presence of granulation, re-epithelialization, and scar tissue formation. Pale, boggy, dry, or crusted granulation tissue is indicative of infection, as are increasing wound drainage and sloughing of grafts.

- Source: evolve student resource website  
- SLO: 1, 7

12. A client is in the resuscitation phase of burn injury. Which route does the nurse use to administer pain medication to the client?
   A. Intramuscular  
   B. Intravenous  
   C. Sublingual  
   D. Topical

- Answer: B  
- Rationale: During the resuscitation phase, the IV route is used for giving opioid drugs because of problems with absorption from the muscle and stomach. When these agents are given by the intramuscular or subcutaneous route, they remain in the tissue spaces and do not relieve pain. In addition, when edema is present, all doses are rapidly absorbed at once when the fluid shift is resolving. This delayed absorption can result in lethal blood levels of analgesics. The sublingual route may not be effective, and because the skin is too damaged, the topical route is not indicated for administering drugs to the client in the resuscitation phase of burn injury.

- Source: evolve website student resources  
- SLO: 7, 10
13. In assessing a client in the rehabilitative phase of burn therapy, which **priority** problem does the nurse anticipate?
   - A. Intense pain
   - B. Potential for inadequate oxygenation
   - C. Reduced self-image
   - D. Potential for infection

   **Answer:** C
   **Rationale:** In the rehabilitative phase of burn therapy, the client is discharged and his or her life is not the same. A priority problem of reduced self-image is expected. Intense pain and potential for inadequate oxygenation are relevant in the resuscitation phase of burn injury. Potential for infection is relevant in the acute phase of burn injury.
   **Source:** evolve website student resources
   **SLO:** 7, 10

14. Which wound assessment characteristics suggest a superficial partial-thickness burn injury?
   - A. Black-brown coloration
   - B. Painful
   - C. Moderate to severe edema
   - D. Absence of blisters

   **Answer:** B
   **Rationale:** Characteristics of a superficial partial-thickness burn injury include pink to red coloration, mild to moderate edema, pain, and blisters. A black-brown coloration is more suggestive of full-thickness burn injury. Moderate to severe edema and absence of blisters may be present with deep partial-thickness to full-thickness burn injuries.
   **Source:** evolve website student resources
   **SLO:** 3

15. A client is undergoing fluid replacement after being burned on 20% of her body 12 hours ago. The nursing assessment reveals a blood pressure of 90/50 mm Hg, a pulse rate of 110 beats/minute, and a urine output of 20 Ml over the past hour. The nurse reports the findings to the health care provider (HCP) and anticipates which prescription?
   - A. Transfusing 1 unit of packed red blood cells
   - B. Administering a diuretic to increase urine output
   - C. Increasing the amount of intravenous (IV) lactated Ringer’s solution administered per hour
   - D. Changing the IV lactated Ringer’s solution to one that contains 5% dextrose in water

   **Answer:** C
   **Rationale:** Fluid management during the first 24 hours following a burn injury generally includes the infusion of (usually) lactated Ringer’s solution. Lactated Ringer’s solution is an isotonic solution that contains electrolytes that will maintain fluid volume in the circulation. Fluid resuscitation is determined by urine output and hourly urine output should be at least 30 Ml/ hour. The client’s urine output is indicative of insufficient fluid resuscitation, which places the client at risk for inadequate perfusion of the brain, heart,
kidneys, and other body organs. Therefore, the HCP would prescribe an increase in the amount of IV lactated Ringer’s solution administered per hour. There is nothing in the situation that calls for blood replacement, which is not used for fluid therapy for burn injuries. Administering a diuretic would not correct the problem because fluid replacement is needed. Diuretics promote the removal of the circulating volume, thereby further compromising the inadequate tissue perfusion. Intravenous 5% dextrose solution is isotonic before administered but is hypotonic once the dextrose is metabolized. Hypotonic solutions are not appropriate for fluid resuscitation of a client with significant burn injuries.

- Source: Saunders book
- SLO: 8
APPENDIX B

UNFOLDING CASE STUDY
Unfolding Case Study

Clinical Group:
Group Members:

Instructions:
Students will be placed in clinical groups during the class session, and will document group responses to the unfolding case study questions on this word document. Please include all group members first and last name on your answer sheet. Each student will be responsible for uploading your answers to Blackboard at the end of the teaching session. Each student will individually be responsible for answering question 19 and submitting their response. This unfolding case study will count towards your class participation grade.

Student Learning Objectives:

By the end of the burn teaching session, the student will:

1. Describe the pathophysiology of a burn, and the body’s physiological response to a burn for the integumentary, vascular, cardiac, pulmonary, GI, metabolic, and immunologic systems.
2. List 5 causes of burns.
3. Compare and Contrast the classification of burn depth injury.
4. Discuss patient teaching on burn prevention and safety.
5. Using the rule of nines, calculate the total body surface area on a burn victim.
6. Determine if a burn victim needs referral to a burn care center.
7. Discuss the 3 phases of a burn injury: including the time frame of each phase and the priorities of nursing care needed for each phase.
8. Using the Parkland Formula, calculate the patients IV fluid resuscitation amount and IV fluid rate for the first 24 hours.
9. List 5 home care needs to address for burn patients before discharge.
10. Formulate a nursing care plan for a burn victim for one priority concept such as tissue integrity, infection, pain, fluid and electrolytes, perfusion or nutrition.
Scenario 1:  
The nurse is working in the emergency department (ED) of a community hospital when the ambulance arrives with A.N., a 28-year-old woman who was involved in a house fire. The patient reports sleeping when the fire started and states she woke up at 0300 and managed to make her way out of the house through thick smoke. The emergency medical crew initiated humidified oxygen at 15 L/min per non-rebreather mask and started a 16-gauge IV with lactated Ringer’s solution. Upon arrival to the ED, her vital signs are: BP 100/66, HR 125, RR 34, and Spo2 93%. She appears anxious and in pain.

1. Describe the interventions needed to care for A.N. upon her initial arrival the ED.

2. While performing the initial assessment, the nurse notes burns located on A.N.’s right anterior leg, left anterior and posterior leg, and anterior torso. Using the rule of nines, calculate the extent of A.N.’s burn injury. Based on the calculation and initial assessment, does this patient meet the criteria for referral to a burn center? Provide a rationale for your response.

3. The nurse suspects that A.N. has sustained deep partial-thickness burns. Which of the following best describes this type of burn?
   a. The skin is blackened; the charred skin is numb. The wounds are reddened, blanch, and have accompanying edema.
   b. The skin is mixed red to waxy white, moist, has blisters and is painful.
   c. The wounds have severe edema, pain may or may not be present, and the color varies.

4. The nurse is concerned about possible smoke inhalation. What indications of this complication will the nurse monitor for?

5. Interpret A.N.’s laboratory results. List the normal range and determine if the patient’s level is elevated or decreased. Provide a short explanation of what the lab test measures and provide possible reasons why the level may be elevated or decreased.
6. A.N. is undergoing burn fluid resuscitation using the standard Parkland formula. She was admitted at 0400. She weighs 154 pounds. Calculate her fluid requirements, specifying how much will be given, the rate of administration, the time intervals used, and the appropriate types of fluid given for burn patients.

7. A.N. is in severe pain. What is the drug of choice for pain relief after burn injury, and how should it be given?

Case Study Progress 2:
A.N. does not exhibit any signs of smoke inhalation injury. Eighteen hours after the injury, the nursing assistant reports these vital signs for A.N. and states that the urine output for the past hour was 20 mL.

8. What does the nurse suspect is occurring, and why is this of concern?

9. What treatments should the nurse anticipate?
10. The health care provider increases A.N.’s IV fluid rate and orders a new set of lab work. Compare A.N.’s current laboratory results with those from admission.

**Chart View**

**Laboratory Test Values**

<table>
<thead>
<tr>
<th>Test</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hgb</td>
<td>24 g/dL</td>
</tr>
<tr>
<td>Hct</td>
<td>59%</td>
</tr>
<tr>
<td>K</td>
<td>5.3 mEq/dL</td>
</tr>
<tr>
<td>Na</td>
<td>128 mEq/dL</td>
</tr>
<tr>
<td>Cl</td>
<td>92 mEq/dL</td>
</tr>
<tr>
<td>Glu</td>
<td>122 mg/dL</td>
</tr>
<tr>
<td>BUN</td>
<td>38 mg/dL</td>
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<tr>
<td>Cre</td>
<td>1.9 mg/dL</td>
</tr>
</tbody>
</table>

11. Which of the following assessment findings would best indicate that A.N. is responding to therapy?

a. Respiratory rate 22; blood pressure 120/74  
b. Heart rate 110; urine output 20 mL/hr for past 4 hours  
c. Blood pressure 120/70; urine output 25 mL/hr for past 4 hours  
d. Blood pressure 104/64; urine output 40 mL/hr for past 4 hours

**Case Study Progress 3:**

A.N. is currently admitted to the medical unit and 36 hours have passed since the burn injury occurred. The nurse is concerned about meeting the patient’s needs for infection prevention, skin integrity, nutrition, fluids, and psychologic support.

12. Discuss the changes that occur with each of these systems when a burn is present and how the nurse can meet her needs related to these changes. What phase of the burn injury is A.N. at this point if 36 hours have passed since the injury occurred?

13. Because of her significant burn injury, A.N. is at high risk for infection. What measures will the nurse institute to prevent this? Create a quick nursing care plan that would guide the nurse in meeting the patient’s needs, using the nursing diagnosis: *Risk for infection related to loss of skin, impaired immune response, and invasive therapies*. Develop 2 patient outcomes and 3 nursing interventions with rationales.

14. A.N. has one area of circumferential burns on her right lower leg. What complication is she in danger of developing? How will the nurse monitor for it?

15. What interventions will facilitate maintaining A.N.’s peripheral tissue perfusion?

16. A.N. is ordered a special burn diet. She has always gained weight easily and is concerned about the size of the portions. What diet-related teaching will the nurse provide? What nursing interventions are needed to meet her nutritional goals?
17. Tissues under and around A.N.’s burns are severely swollen. She looks at the nurse with tears in her eyes and asks, “Will they stay this way?” What is the nurse’s best response?

18. A.N. is concerned about visible scars. What can the nurse tell her to calm her fears?

19. **Individual Reflection Assignment:** Upon completion of this case study, each student will complete a short (two paragraph maximum) individual reflection assignment using the following prompt to guide your response:

   - The rehabilitation phase is the last phase of nursing care for a burn patient. This begins with wound closure and ends when the patient returns to the highest level of functioning. As the discharge nurse for a patient in the rehabilitation phase, what are the priority nursing care considerations to include in discharge planning? Include any outpatient follow up, home health care needs, community resources, psychosocial needs, and/or patient education considerations.
APPENDIX C

STUDENT PERCEPTION SURVEY
Student Perception Survey of Teaching Session

Instructions: This questionnaire is a series of statements about your personal attitudes about the instruction you receive during your class. Each item represents a statement about your attitude toward your satisfaction with learning, self-confidence in obtaining the instruction you need, and preparation for clinical practice. There are no right or wrong answers. You will probably agree with some of the statements and disagree with others. Please indicate your own personal feelings about each statement below by marking the numbers that best describe your attitude or beliefs. Please be truthful and describe your attitude as it really is, not what you would like for it to be.

Please type your name in the space below. This will be used for data collection purposes only.

What is your Gender?
O Male
o Female
o Other

What is your self-reported GPA?

What is your Race/Ethnicity?
O White
o Black or African American
o American Indian or Alaska Native
o Asian
o Native Hawaiian or Pacific Islander
o Other
<table>
<thead>
<tr>
<th></th>
<th>Strongly disagree (1)</th>
<th>Disagree (2)</th>
<th>Somewhat disagree (3)</th>
<th>Neither agree nor disagree (4)</th>
<th>Somewhat agree (5)</th>
<th>Agree (6)</th>
<th>Strongly agree (7)</th>
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</thead>
<tbody>
<tr>
<td>The teaching methods used in class were helpful and effective. (1)</td>
<td></td>
<td></td>
<td></td>
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<td>The teaching session provided me with a variety of learning materials and activities to promote my learning on the content presented. (2)</td>
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<td>I enjoyed how my instructor taught the class. (3)</td>
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<tr>
<td>The teaching materials used in this class were motivating and helped me to learn. (4)</td>
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<td>The way my instructor(s) taught the</td>
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content was suitable to the way I learn. (5)

**Self-confidence in Learning**

| I am confident that I am mastering the content that my instructors presented to me. (1) | strongly disagree (1) | Disagree (2) | Somewhat disagree (3) | Neither agree nor disagree (4) | Somewhat agree (5) | Agree (6) | Strongly agree (7) |
| I am confident that this teaching session covered critical content necessary for the mastery of this nursing content. (2) | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| I am confident that I am developing the skills and obtaining the required knowledge from this teaching session to perform necessary tasks in a clinical setting (3) | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
My instructors used helpful resources to teach the content. (4)

It is my responsibility as the student to learn what I need to know from this teaching session. (5)

I know how to get help when I do not understand the concepts covered in the teaching session. (6)

It is the instructor’s responsibility to tell me what I need to learn of the content during class time. (7)
### Preparation for Practice

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<tr>
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<th>Strongly disagree (1)</th>
<th>Disagree (2)</th>
<th>Somewhat disagree (3)</th>
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<th>Agree (6)</th>
<th>Strongly agree (7)</th>
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<tbody>
<tr>
<td>The reading assignment for this teaching session will prepare me for clinical practice. (1)</td>
<td>○</td>
<td>○</td>
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<tr>
<td>This unfolding case study will prepare me for clinical practice. (2)</td>
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APPENDIX D

FIELD OBSERVATION DOCUMENT
Zone A: Row 1-3: Clinical Groups Abbey, Barron, and Beans
Observers will rotate zones after each scenario to observe groups located in designated zone for
the 10-minute group discussion. Comment in applicable section labeled **Task** (defined as the
student trying to complete the assigned task), **Nursing Knowledge** (defined as discussing facts
and nursing care for the burn patient), and **Clinical Decision Making** (defined as the student
making clinical nursing decisions similar to what might occur in the clinical setting).

<table>
<thead>
<tr>
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<th>Scenario 1</th>
<th>Scenario 2</th>
<th>Scenario 3</th>
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<tbody>
<tr>
<td><strong>Task:</strong></td>
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<tr>
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<tr>
<td><strong>Clinical Decision Making:</strong></td>
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Zone C: Row 7-10: Clinical Groups Rice, Robinson, Stokley
Observers will rotate zones after each scenario to observe groups located in designated zone for the 10-minute group discussion. Comment in applicable section labeled **Task** (defined as the student trying to complete the assigned task), **Nursing Knowledge** (defined as discussing facts and nursing care for the burn patient), and **Clinical Decision Making** (defined as the student making clinical nursing decisions similar to what might occur in the clinical setting).

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<tbody>
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<tr>
<td>Nursing Knowledge:</td>
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<tr>
<td>Clinical Decision Making:</td>
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APPENDIX E

INFORMED CONSENT
Informed Consent

Study title: Integrating Clinical Experiences Into Classroom Education

Investigator’s Name: Jill R. Hobbs, Doctoral Student

You are being asked to take part in a research study. This study is called Integrating Clinical Experiences Into Classroom Education. The study is being done by Jill R. Hobbs, who is a doctoral student at the University of Alabama. Mrs. Hobbs is being supervised by Cecil Robinson who is a professor and the Director of Learning and Evaluation in the College of Community Health Sciences at the University of Alabama.

Is the researcher being paid for this study? The investigator is not receiving any pay for this study.

Is this research developing a product that will be sold, and if so, will the investigator profit from it? The investigator is not developing a product that will be sold in the future.

What is this study about? What is the investigator trying to learn? The purpose of this study is to compare a slide lecture to an unfolding case study to determine if student learning outcomes improve based on the teaching strategy utilized. The investigator is trying to learn about which teaching strategy will help bridge the knowledge gap between the classroom environment and clinical experience of the student nurse.

Why is this study important or useful? The results of the study could improve teaching and learning strategies in the classroom setting. Using the most effective teaching strategies could result in improved learning for students, resulting in a more connected classroom and clinical experience.

Why have I been asked to be in this study? You have been asked to participate in this study because you are enrolled in NUR 372 Professional Nursing Practice – Adult Health. This semester you will receive a lecture on the topic of nursing care of the burn patient. Students enrolled in this course will be eligible for participation in the study.

How many people will be in this study? About 100 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 complete course work as scheduled and participate within different learning activities for the teaching session. Participants will be asked to attend regular class meetings and participate in discussion and lecture as a part of regular course requirements. Evaluation methods include seven multiple choice questions at three different time
intervals. Multiple-choice questions are part of standard course evaluation methods. You will be asked to complete a short survey on your learning experience after the teaching session. The survey will be given during class time at the end of the teaching session. You are being asked to consent to allow the investigator to use your regular course assignments for research purposes. You are not being asked to consent to participate in your regular course requirements.

How much time will I spend being in this study?  
Your participation in this experiment will take approximately 40 minutes of class time, 5 minutes to complete the survey, and 20 minutes to complete the multiple-choice questions. The entire study will take approximately 1 hour of your time.

Will being in this study cost me anything?  
The only cost to you from this study is your time.

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?  
No foreseeable risks have been associated with this study. The teaching sessions and evaluation methods are an existing part of your nursing curriculum.

What are the benefits (good things) that may happen if I am in this study?  
The benefits which may reasonably be expected to result from this study are enhanced knowledge and ability to utilize information to further build your nursing education and practice. We cannot and do not guarantee or promise that you will receive any benefits from this study. Your decision whether or not to participate in this study will not affect your grade in this course.

How will my privacy be protected?  
You are free to decide if you want to participate in this study. The consent, multiple-choice questions, and survey will be administered via Blackboard. No other participant or instructor outside of the course will have access to your account information or the responses to the questions and/or survey.

How will my confidentiality be protected?  
The data obtained in the study will remain confidential. The multiple-choice questions and survey will be administered via Blackboard, your institutions learning management system. This is a secure, password protected system. The test scores and survey responses will be extracted from Blackboard and input into a spreadsheet. Once the data set is complete, there will be no identifying information included in the spreadsheet. The spreadsheet will be maintained on a password protected computer. The consent form will be saved on a password protected computer. There will be no way to link the consent form to the questions or survey responses. No individual names will be published or identified for the study.

UNIVERSITY OF ALABAMA IRB  
CONSENT FORM APPROVED: 9-11-17  
EXPIRATION DATE: 9-10-18
What are the alternatives to being in this study? Do I have other choices?
Participants will receive two extra credit points on the third exam for participating in the study. The alternative to being in this study is not to participate. If you chose to not participate, an alternative extra credit assignment of completing a two page paper on the topic of nursing care for burn patients will be an option. If you chose the alternative assignment, you will receive 2 extra credit points on the third exam.

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 about the study right now, please ask them. If you have questions about the study later on, please call Jill R. Hobbs at 205-887-0527. You can also contact the faculty advisor, Dr. Cecil Robinson at 205-348-0523.

If you have questions, concerns, or complaints 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://ovpred.ua.edu/research-compliance/prco/ or email the Research Compliance office at participantoutreach@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.

____________________________________  ________________________
Signature of Research Participant      Date

____________________________________  ________________________
Signature of Investigator              Date

UNIVERSITY OF ALABAMA IRB
CONSENT FORM APPROVED: 9-11-17
EXPIRATION DATE: 9-10-18

Revised June 2015
August 20, 2018

Jill Hobbs  
Capstone College of Nursing  
The University of Alabama  
Box 870326

Re: IRB # 17-0R-302-ME-R1 “Integrating Clinical Experiences into Classroom Education”

Dear Ms. Hobbs:

The University of Alabama Institutional Review Board has granted approval for your renewal application. Your renewal application has been given expedited approval according to 45 CFR part 46. 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 August 19, 2019. If the study continues beyond that date, you must complete the IRB Renewal Application. If you modify the application, please 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, please complete the Request for Study Closure form.

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

Good luck with your research.

Sincerely,

[Signature]

Carpentor T. Myles, MSM, CIM, CRP  
Director & Research Compliance Officer  
Office for Research Compliance

358 Rose Administration Building | Box 870127 | Tuscaloosa, AL 35487-0127  
205-348-8461 | Fax 205-348-7189 | Toll Free 1-877-820-3066