THE EFFECT OF AN UNFOLDING CASE STUDY ON CRITICAL THINKING, KNOWLEDGE ACQUISITION, AND HANDOFF COMMUNICATION IN BACCALAUREATE NURSING STUDENTS

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ABSTRACT

THE EFFECT OF AN UNFOLDING CASE STUDY ON CRITICAL THINKING, KNOWLEDGE ACQUISITION, AND HANDOFF COMMUNICATION IN BACCALAUREATE NURSING STUDENTS

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Miscommunication during handoffs at the time of transition for the older adult patient often results in hospital readmissions, penalties, and nursing malpractice. Handoff communication (HOC) is a necessary and critical factor in patient safety; therefore, it is imperative that nurses be educated and trained in how to communicate essential geriatric patient data, minimize errors and ensure continuity of care. Nursing researchers report that HOC is a critical responsibility and varies in educational methods creating a latent, patient safety risk. The unfolding case study (UCS) is increasingly being used to promote critical thinking and improve communication, but the lack of evidence to guide educational practice limits the use in pre-licensure nursing programs. Therefore, the purpose of this study was to examine the effects of an UCS teaching pedagogy on critical thinking, knowledge acquisition and HOC skill performance. A quasi-experimental study design was employed to examine the effect among seventy-one (71) baccalaureate nursing students in a historically black college in southeastern Louisiana. The variables in

this study were the UCS, traditional didactic lecture, critical thinking, knowledge acquisition, and HOC skill performance.

Social Constructivism and the Constructive Theory Model (CTM) are theoretical frameworks that guided this research. Students were asked to complete pre- and post-test questionnaires in Health Education Systems, Inc. (HESI) custom exam, Handoff-Clinical Examination (CEX), and Health Sciences Reasoning Test (HSRT). The UCS educational intervention using pre-clinical activities, faculty training, communication workshop, and debriefing/guided reflection, was conducted over a two-week period. The Solomon four-group meta-analysis approach was used to determine the effect of the UCS on learning outcomes before and after the educational intervention and implementation of the ISBAR standardized tool. No statistically significant differences between the intervention and control groups on knowledge acquisition, handoff communication skill performance and critical thinking were observed. A moderate positive correlation was found (r (70) .322, $p<.05$), indicating a statistically significant relationship between knowledge acquisition and critical thinking. This educational intervention has implications for nursing education, practice, research and health policy by addressing quality and patient safety competencies in handoff education.

DEDICATION

This dissertation is dedicated to my family. I would like to thank my parents, retired Master Sergeant Joseph C. and Ruth Cormier, for their prayers and unconditional love. Thank you both for introducing me to unlimited potential and the power of prayer. You both continue to inspire and motivate me always to do my best.

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CHAPTER I

INTRODUCTION

In the United States' (U.S.) healthcare system, an alarming 80 percent of the serious medical errors that occur in hospitalized patient care are a result of miscommunication between health care providers during transfers and handoffs **(**Beach, 2006; Huang et al., 2010; James, 2013; The Joint Commission [TJC], 2012). Data suggests, one in five older adults managing heart disease or respiratory failure transferring to another setting is most affected by inaccurate or wrong information and readmitted within 30-days costing Medicare $17 billion annually (Jencks, Williams & Coleman, 2009). In fiscal year 2015, 64% (2,592) of U.S. hospitals were penalized 2% of their Medicare payments under the Hospitals Readmissions Reduction Program (HRRP), included in the Affordable Care Act (ACA) for high 30-day readmissions (Rau, 2016; Center for Medicare and Medicaid Services, [CMS], 2015**)**. Also, nurses with varying levels of education and training were negligent in 93.2% of malpractice claims, resulting from a failure to identify and communicate pertinent health information (CNA, 2015).

According to the World Health Organization (WHO, 2014), the Joint Commission (2013) and the Agency for Healthcare Research and Quality (AHRQ), handoff communication (HOC) is a necessary and critical factor in patient safety. HOC, defined as a complex process between a provider and receiver transfers patient information,

accountability, and responsibility (AHRQ, 2008; Friessen, 2008). Effective HOC exchanges patient care information that is clear, complete, brief and timely with the purpose to ensure continuity of care (Berger et al., 2012; Holly & Poletick, 2013; Patterson & Wears, 2010; TJC, 2012; Wheeler, 2014). Since 2006, TJC has identified HOC as a National Patient Safety Goal and requires hospitals to use a standardized approach with an opportunity to ask and respond to questions (TJC, 2016). However, communication during handoff continues to be inaccurate, unstructured, and often missing crucial information (Holly& Poletick, 2013; Riesenberg, 2010).

Nurses, as the coordinators of care, are uniquely positioned across the healthcare system to intercept errors (ANA, 2012; Naylor, 2010) and ensure continuity of care (Lamb, 2013; IOM, 2003). The older adult managing chronic illness is one population that uses the health care system more often and interact with more health care providers, placing them at greater risk of experiencing harm at time of transfer between settings (Cline, 2016; Corbett et al., 2010), especially if inadequate handoff reports occur (HHS, 2016). Unnecessary hospitalizations and readmissions due to miscommunication place the older adult at an increased risk for medication errors, infections, falls and longer hospital stays (Office of the Inspector General, 2010). This increasing frequency in complex information exchange emphasizes a need to improve communication that occurs during the handoff process (Kitch et al., 2008).

Statement of the Problem

A plethora of publications and studies exists about factors that influence current practices in nursing handoff (Friesen et al., 2008) and how these can improve communication (Staggers & Blaz, 2013). Formal education and training are identified as

a key strategy for effective handoffs (Reisenberg et al.,2010; Friesen et al., 2008). A growing body of research has suggested instructional strategies with features of real-life scenarios, role play, social skills, and structured methods in nursing education can improve communication behavior skills (Arora et al., 2009; Kitson et al., 2014; Reisenberg et al., 2010). However, small sample sizes, lack of clear conceptual and theoretical frameworks (Arora, et al., 2009; Kitson, et al., 2014), and lack of valid and reliable measures limit the conclusion that educational interventions in handoff communication impact learning or patient outcomes (Abraham, 2014; Gordon & Findley, 2011**)**. Few studies, to date, exist in clinical nursing education that provide guidance on best practice methods to educate and train in handoff communication (Arora et al., 2009; Reisenberg et al., 2010) during the time of transitional care.

Current methods of teaching HOC in undergraduate pre-licensure programs are inconsistent and vary in methods, technique, and evaluation (Arora et al., 2009; Gordon & Findley, 2011; Hill, & Nyce, 2010; Van Eaton, 2010). Furthermore, curricula content is at times episodic and inconsistent (Girdley, Johnsen, Kwekkeboom, 2009; Murray, 2010) with HOC introduced late in senior-level courses (Barton, et al., 2009). Although nursing handoff is a common practice, this variation in educational methods is prone to errors and creates a latent patient safety risk (Armstrong & Barton, 2013). Hence, nurse educators are faced with the challenge of how to adapt curriculum changes that guide safety education and create real-world learning experiences in HOC during patient transfer across settings (Forbes & Hickey, 2009; Glasgow et al., 2010; Spector & Echternacht, 2015).

Similarly, nurse educators are challenged with preparing students to care for an aging population and have identified gerontological content as an essential element of nursing education (NLN, 2010; RWJF, 2012; TJC, 2010). Currently, there exists insufficient content in baccalaureate nursing programs (Berman et al., 2005) with inadequate curriculum design for providing education and training in geriatric population (Bardach & Rowles, 2012). In addition, baccalaureate nursing students are rarely exposed to long-term nursing care in diverse settings (Harahan, 2010; Koskinen, 2015).

Case-based instruction has been associated with improved communication skills of nursing students but takes considerable time and faculty to design and implement (Foronda, Gattamorta, Snowden, & Bauman, 2013; Gordon & Finley, 2011**).** Additionally, the Identify, Situation, Background, Assessment, and Recommendations (ISBAR) mnemonic that originates from the Situation, Background, Assessment, and Recommendations (SBAR) framework shows great promise in efforts to standardize handoff processes and teach health care professionals how to communicate critical health information (WHO, 2013; TJC; 2013). According to Benner, Sutphen, Leonard and Day (2010), case studies that simulate real-world clinical practice and combine didactic, interactive and transferable instructional methods enhance learning and promote problem-solving, decision-making, and critical thinking abilities (Billings, Kowalski, & Reese, 2011).

Therefore, Quality and Safety Education for Nurses (QSEN) and the National League for Nursing (NLN, 2010) recommend the use of an unfolding case study (UCS) as an innovative teaching resource in nursing education (Cronenwett, Sherwood, & Gelmon, 2009). A UCS that incorporates quality and safety competencies in classroom

activities, and allows students to practice SBAR in the simulation laboratory and clinical setting encourages the integration of teaching a culture of safety in the curriculum (Barnsteiner, 2011). The NLN Advancing Care Excellence for Seniors (ACE.S) scripted UCS is one teaching pedagogy that fosters the integration of QSEN competency, to include essential knowledge and skills in geriatric content, and promotes nurse to nurse communication. Multiple instructional strategies are designed to be used in the classroom, skills lab, simulation, and clinical.

Few studies to date have provided empirical evidence regarding the utilization of the UCS in teaching HOC skills in the care of the older adult. Additional research is warranted to establish clear handoff communication competency as an evidence-based teaching pedagogy in undergraduate nursing education (Friessen et al., 2008; Gordon & Findley, 2011; Staggers & Blaz, 2012; Mansur, 2011). Consequently, it is imperative to study the impact of the UCS on knowledge acquisition, handoff communication skill performance, and critical thinking in the first semester, junior baccalaureate nursing students enrolled in their first clinical course.

Purpose

The purpose of this study was to examine the effectiveness of a UCS as a teaching pedagogy for the first semester, junior, baccalaureate, nursing students. More specifically, this study tested the effects of an ACE.S scripted unfolding case study on critical thinking, knowledge acquisition, and HOC skill performance in this population of students. The research was accomplished using the Solomon Four-Group Design.

Significance of the Study

Results from this study may provide insight to nurses, administrators and other health care professionals in determining best practices in safe handoff communication education and training, thus decreasing errors associated with the care of older adults at the time of transition. Findings from this study may assist nurse educators in enhancing baccalaureate nursing curriculum to guide safety education and active learning strategies that integrate knowledge, skill, and critical thinking in meeting QSEN objectives. For nursing research, this study used the most rigorous research design, the Solomon Four Group, to test the effectiveness of an UCS education intervention on three important variables (knowledge acquisition, handoff communication skill performance, and critical thinking). This research will also provide information for policy makers in meeting the challenge to support a highly-trained nursing workforce that ensures quality and safety in the care of older adults. Information for policy makers allows decisions to advocate for increased funding at the local, state and federal levels in the agenda to decrease costs associated with unnecessary hospitalizations and readmissions.

Research Variables

For the purposes of this study, the independent variables are unfolding case study and traditional didactic lecture. The dependent variables are knowledge acquisition, handoff communication skill performance, and critical thinking. This study observed the effect of the independent variables, traditional didactic lecture, and UCS-ACE.S scenario intervention, on the dependent variables, knowledge acquisition, handoff communication skill performance, and critical thinking. The selected demographic variables were age,

race, sex, marital status, class status, enrollment and cumulative grade point average (cGPA).

Research Hypotheses

This study examined the following hypotheses:

H_{01}. There will be no statistically significant difference in pre-test and post-test knowledge acquisition scores, as measured by the HESI Custom Exam, in the first semester, junior, baccalaureate, nursing students who receive the traditional didactic lecture and those who receive the ACE.S-UCS scenario intervention.

H_{02}. There will be no statistically significant difference in pre-test and post-test handoff communication skill performance scores, as measured by the Handoff-CEX tool, in the first semester, junior, baccalaureate, nursing students who receive the traditional didactic lecture and those who receive the ACE.S- UCS scenario intervention.

H_{03}. There will be no statistically significant difference in pre-test and post-test critical thinking scores, as measured by the Health Sciences Reasoning Test (HSRT), in the first semester, junior, baccalaureate, nursing students who receive the traditional didactic lecture and those who receive the ACE.S-UCS scenario intervention.

H_{04}. There will be no statistically significant relationship between the selected demographic variables (age, race, sex, marital status, class status, enrollment, and cGPA) and knowledge acquisition as measured by HESI post-test scores, handoff communication skill performance, as measured by Handoff-CEX post-test scores, and critical thinking as measured by HSRT post-test scores.

H_5. There will be a statistically significant relationship between knowledge acquisition, handoff communication skill performance, and critical thinking in the first semester, junior, baccalaureate, nursing students.

Definition of Terms

For the purposes of this study, the following terms were utilized in this study:

- **Competency**

Conceptual definition. An expected level of performance that integrates knowledge, skills, and abilities and judgment. Competence can be evaluated by using tools that capture objective and subjective data about the individual's knowledge base and actual performance and are appropriate for the specific situation and the desired outcome of the competence (ANA, 2010).

Operational definition. For the purposes of this study, the students in the experimental and control groups participated in a two-week classroom/clinical unfolding case study with a focus on handoff communication.

- **Critical Thinking**

Conceptual definition. All or part of the process of questioning, analysis, synthesis, interpretation, inference, inductive and deductive reasoning, intuition, application, and creativity (AACN, 2008).

Operational definition. Critical thinking was measured using the Health Sciences Reasoning Test (HSRT) to assess the student's critical thinking skills. The test was designed for health science professionals and students in undergraduate and graduate sciences educational programs. The HSRT is a 33-multiple-choice questionnaire which assessed five subdomains of critical thinking that can be administered in 50 minutes. The

five domains include analysis, inference, evaluation, induction and deduction. The HSRT scale provides an overall score of critical thinking ability, a set of scale scores and a percentile ranking (Facione, 2006).

- **Handoff Communication Skill Performance**

Conceptual definition. A complex communication process that transfers essential information, responsibility, and accountability for the care of a patient from one nursing professional to another (Friesen et al., 2008).

Operational definition. Handoff communication skill was measured using the Handoff Clinical Examination (CEX) tool. The Handoff CEX tool evaluated the handoff provider and handoff recipient. The handoff provider evaluation included six domains; setting, organization, communication skills, content, clinical judgment, professionalism, and an overall score. The handoff recipient included five domains; setting, organization, communication skills, clinical judgment, professionalism and overall score (Horwitz, et al., 2013).

- **ISBAR/SBAR**

Conceptual definition. An effective method of structured communication proposed as a framework applicable to healthcare professionals. Identify, Situation, Background, Assessment, and Recommendations (ISBAR) is a mnemonic that originates from the Situation, Background, Assessment, and Recommendation (SBAR) framework. It is used as an organizing tool to standardize communication during handoff processes and teach health care professionals how to communicate critical health information (WHO, 2013).

Operational definition. For the purposes of this study, the students in the experimental and control groups used this tool to organize data when participating in a two-week classroom/clinical unfolding case study with a focus on handoff communication.

- **Knowledge Acquisition**

Conceptual definition. The Constructivist theory describes "learning to be an active process in which learners construct new ideas or concepts based on their past or current knowledge" (Brandon & All, 2010, p. 90). The student builds on basic information, ask questions and get clarification on content discussed. The student's interaction, reflection, and the instructor's immediate feedback create the potential for learners to construct new knowledge (Brandon & All, 2010).

Operational definition. Knowledge acquisition was measured by mean performance scores on the HESI custom exam that was given as a pre-test and post-test to students to cover content in respiratory, cardiovascular, communication, auditory and visual impairment, and gerontology. The HESI custom exam was a secured computer examination that was formulated from course objectives.

- **Pre-Licensure Baccalaureate Nursing Student**

Conceptual definition. A post-secondary student who has not earned a registered nursing license by passing the National Council Licensure Examination (NCLEX, 2015) as required by the National Council of State Boards of Nursing (NCSBN).

Operational definition. The Pre-licensure baccalaureate nursing student was measured using self-report identification in demographics and enrolled in a degree program that offers baccalaureate degrees in nursing. For the purposes of this study, the

first-semester junior student was enrolled in a Medical Surgical Health Deviations I course (the second clinical nursing course). A junior level nursing student has completed 63 credit hours. The first-semester junior student in this nursing program had basic knowledge of growth and development in the care of older adults and assessment of the geriatric client.

- **Unfolding Case Study (UCS)**

Conceptual definition. A comprehensive plan of learning that allows students practice time to solve individually and collectively problems they may encounter in clinical simulation. It combines a variation and extension of the frequently used strategy of a case study with multiple cooperative learning strategies, culminating in an individual reflective writing experience (Glendon & Ulrich, 1997, p. 15).

Operational definition. It evolves over time in a manner that is unpredictable to the learner as new elements of the case are revealed during multiple encounters (Reese, 2011). For the purposes of this study, the UCS was conducted over a two-week classroom/clinical in handoff communication scenario. The UCS included a pre-simulation/clinical activity (PowerPoint (PPT) on the care of Chronic Obstructive Pulmonary Disease (COPD) and Pneumonia patient, online best practices in handoff communication/a successful handoff video), a two-hour training session for assigned clinical faculty, and a 3 hour handoff communication workshop (ISBAR checklist/protocol) for nursing students.

Theoretical Framework

A Social Constructivist theoretical framework and the Constructive Theory Model (CTM) guided this research study. In Social Constructivism, active learning occurs within a social context. The learner constructs new knowledge by building upon previous knowledge and individual perception, to make sense and meaning of their learning experience (Fosnot, 1989). The basic tenet of Social Constructivism is that students learn by doing rather than observing.

While differing levels of learning occurs in most adult educational programs, a student-centered approach and one that promotes critical thinking are essential in the complex and ever-changing world of health care. If the learner can develop critical thinking skills within the collaborative context, more likely, the individual will be prepared for working in the health care system. The extent to which the development of critical thinking skill occurs is critical to the learning process.

According to Lev Vygotsky (1978), the method of learning is a collaborative process that includes two developmental levels: (1) zone of actual development; and (2) the zone of proximal development.

Zone of actual development (ZAD) is the first level in Vygotsky's theory. The ZAD is a level at which the learner is currently capable of solving problems independently. The student comes to the learning experience with prior knowledge, skills, beliefs, and values and attitude. Nursing education using the nursing process requires the student learner to build nursing knowledge upon prerequisite courses that include anatomy and physiology, psychology, microbiology, and nutrition. These elements provide a constructivist foundation for learning to be facilitated by the nursing student.

Zone of proximal development (ZPD), is the second level of development. The ZPD is the standard of potential development. It is the difference between what the learner can do without help and what they can do with the guidance of instructors and in collaboration with peers (Kozulin, 1986). In the ZPD, the learner can understand material and problem-solving at a higher level. The ZPD refers to the range of tasks that are too difficult to accomplish independently but can be mastered if they are guided by the instructor in conjunction with peers.

Another essential feature of the ZPD is scaffolding. Scaffolding is a process by which an instructor guides learning activities incrementally, in cognitive steps forming a temporary framework to process new material and link it to the students' current knowledge (Kozulin, 1986). This temporary structure used in scaffolding allows students to understand new ideas and complete new tasks. Scaffolding adjusts the support offered during instruction to fit the student's current level of performance. Included in scaffolding are the use of multiple instructional learning strategies. The tasks involved are authentic, set in meaningful context, and related to the real world. The tasks should offer an opportunity for self-assessment, peer discussion, correction, and instructor feedback. The instructor is encouraged to use: teaching by asking, explaining tasks, diagnostic and thought-provoking questions; analysis or why questions; synthesis; and evaluation or judgment questions. Common strategies used in scaffolding include; providing prompts, links, guides, structures, role- modeling performance, pairing an advanced learner with developmental learners, and case studies. Learning through scaffolding bridges the ZAD with the ZPD and promotes independent lifelong critical thinkers.

The Constructive Theory Model

In addition to the Vygotsky's Social Constructivist Theory of Learning in a social context, Brandon and All's (2010) Constructive Theory Model views the learning process as a spiral in nature. Figure 1 displays The Constructive Theory Model. The student is at the center point, of the spiral forming groups with peers and interacting with the educator. Brandon and All determined that as students move through the different levels, building new knowledge and skills, promotes critical thinking. The student's interaction, reflection, and the instructor's immediate feedback create the potential for learners to construct new knowledge (Brandon & All, 2010).

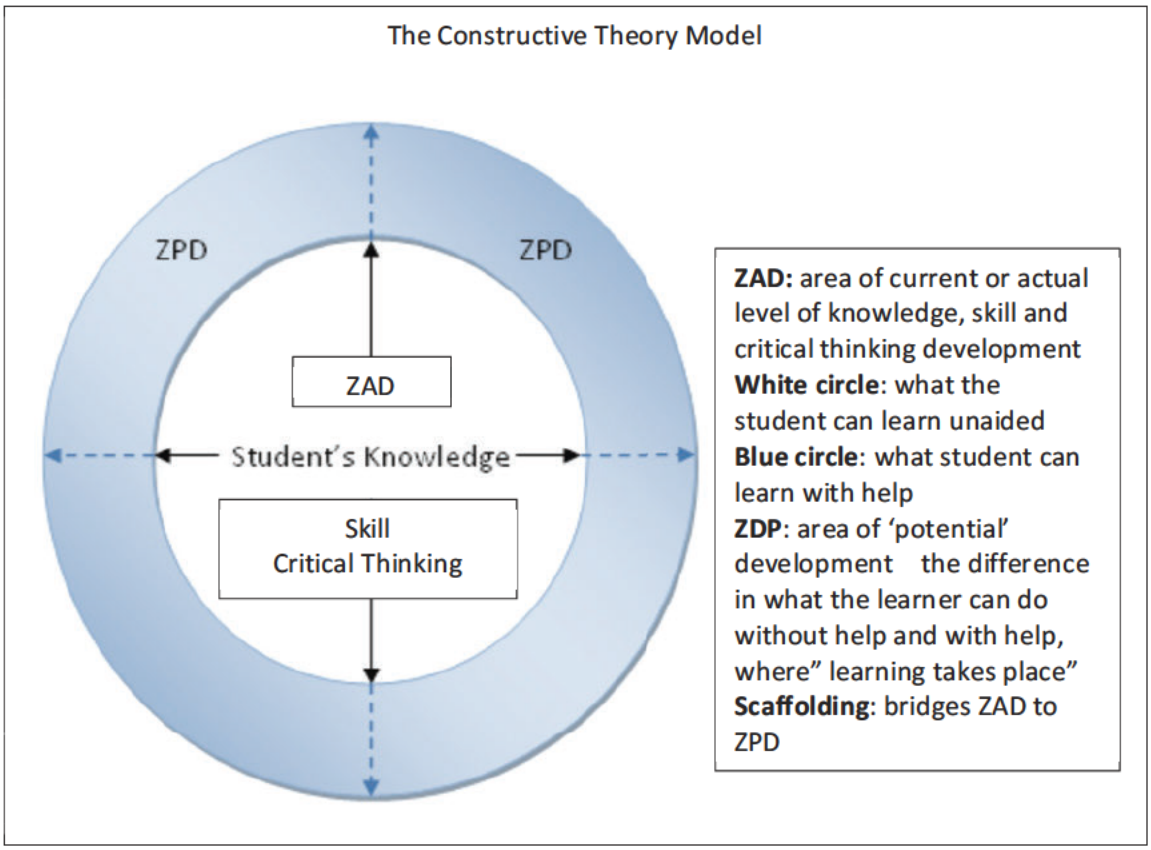

Figure 1. "The Constructive Theory Model," adapted from Brandon & All (2010).

Role of student. The role of the student is to be an active participant, accepting responsibility for their own learning in acquiring knowledge. Students bring prior knowledge, skill, and critical thinking into the learning experience in which they must critique and re-evaluate their understanding of it. This process of interpretation, articulation, and re-evaluation is repeated until they master their comprehension of the content.

Role of instructor. The instructor is the facilitator of knowledge, skill and critical thinking. The role of the instructor is to coach or "guide on the side," providing the learner with an opportunity to test current understanding. The instructor attempts to be non-judgmental, understanding the student's current thinking ability about the topic. The instructor facilitates the learning process, bringing students closer to the context by creating meaningful zones of proximal development and cognitive bridges through social interactions.

Assessment. Assessment of knowledge, skill and critical thinking is a continuous process throughout the learning experience. The types of assessments often used in the social constructivist classroom include quizzes, or exams, presentation, role playing, group-based projects and case studies. However, learning can be undermined when the assessment is only a single exposure, associated with abrupt implementation and termination of the approach. The tool of assessment is to enhance both the student's learning and instructor's understanding of the student's progress.

The use of case studies in social constructivism is one instructional strategy that creates a real-world experience for the student. Since constructivism learning begins with a case, problem, or issue, the student works on the problem while the instructor facilitates

and coaches throughout the learning process (Brandon & All, 2010; Fosnot, 1989). Proper structuring of the scenario, like that in the unfolding case study, allows the educator to ask questions, and get immediate answers. As the case study unfolds, more information is revealed, allowing the student to build on basic information, ask questions, and get clarification on content gathered. The student's interaction and reflection and the instructor's immediate feedback create the potential for learners to construct new knowledge, skills, and ultimately develop critical thinking.

The use of a UCS allows the student to build upon current knowledge, skills and critical thinking that explore best practices, potential variables, and possible outcomes (Durham & Sherwood, 2008; Gaberson & Oermann, 2007). To be effective, the UCS must be complex, realistic and level appropriate that mimics actual clinical practice while challenging the student to critically think (Azarello & Wood, 2006; Benner, Sutphen, Leonard, & Day, 2009; Day, 2011; Popil, 2011). Integrating the UCS from classroom to laboratory and clinical setting provides an opportunity for the student to connect theory with practice while building competency.

Social constructivist theory and the Constructive Theory Model are congruent and support the use of case studies. These two frameworks were used to determine the influence of an unfolding case study on knowledge acquisition, handoff communication skill performance, and critical thinking in students participating in this research.

Assumptions

According to Burns and Grove (2011), assumptions are statements taken for granted or sometimes considered true, even though they have not been scientifically tested. This study will be based on the following assumptions:

1. Learning is an active process (Piaget, 1977).

2. Ideals and their importance may be diverse among individuals (Hunter & Krantz, 2010).
3. Learning activities are conducted through interaction with peers/instructors (Kala, Isaramali, & Pohthong, 2010).
4. The goal of the learning environment is to help the learners achieve positive learning outcomes (Legg, Adelman, Mueller & Levitt, 2009).
5. Handoff communication reduces errors and ensures continuity of care (Patterson & Wears, 2010).
6. Handoff communication can be improved (Gordon & Findley, 2011).

Limitations

Several limitations of this study were acknowledged. Findings of this study have limited generalizability because:

1. the population is limited in size,
2. the sample is limited to those individuals enrolled in the first-semester junior clinical nursing course,
3. the sample is drawn from one geographical area with a predominantly African-American population, and
4. the sample is drawn from baccalaureate registered nurse (RN) students in a pre-licensure baccalaureate nursing program.

Summary

In summary, the literature indicated HOC errors are a multifaceted issue which carries consequences for society. HOC is a necessary and critical factor in patient safety; therefore, it is imperative that nurses be skilled at recognizing errors and possess the ability to intervene and prevent harm. Nursing researchers reported that HOC is a critical activity and varies in educational methods prone to mistakes that create a latent patient safety risk. Thus, nurse educators must provide their students the educational preparation that mimics the real world of clinical practice to develop the knowledge, skills and critical thinking in providing quality, safety care for those older adults in transition. Therefore, the purpose of this research study is to test the effect of an unfolding case study on critical thinking, knowledge acquisition, and handoff communication in baccalaureate nursing students.

CHAPTER II

REVIEW OF THE LITERATURE

The primary purpose of this study was to examine the effect of an unfolding case study (UCS) as a teaching pedagogy on first semester, junior baccalaureate nursing students. More specifically, this study will determine the effect of an ACE.S scripted UCS on knowledge acquisition, handoff communication skill performance and critical thinking in this population of students. Included in this review of literature are studies addressing the variables of unfolding case study, knowledge acquisition, handoff communication skill performance, and critical thinking. The findings from this review will identify knowledge gaps in studies of the unfolding case study on learning outcomes in first-semester junior baccalaureate nursing students.

Development of the Unfolding Case Study

Glendon and Ulrich (1997), first developed the unfolding case study (UCS) model as an extension and variation of the traditional case study. A traditional case study presents data at the beginning of the discussion and students develop a single response based on that information (Palmer, 2008; Reese, 2011). In contrast, unfolding case studies were originally defined and developed as "an ever-changing case or scenario that students process sequentially" allowing students to read, process, and respond to one situation before accessing the next information (Glendon & Ulrich, p. 16). According to

Glendon and Ulrich (1997), the purpose of their student-centered approach was to prepare the student nurse to critically think, effectively communicate and reflect on their learning abilities by bringing the classroom and clinical setting together to mimic the real world of nursing practice.

In 2008, the American Association of Colleges of Nursing (AACN), recommended the UCS as an interactive instructional method to thread general education concepts in curriculums based on the *Essentials of Baccalaureate Education for Professional Nursing Practice*. In 2009, the Quality and Safety Education for Nursing (QSEN) initiative funded by the Robert Wood Johnson Foundation, adopted the UCS to teaching methodology to assist nursing faculty with integrating quality and safety competencies across the curriculum (Cronenwett et al., 2009). Today, in nursing education, the practice of using UCSs is more common in the classroom (Day, 2011) than simulation in the laboratory setting (Bamber et al., 2010; Reese, 2011), and in online courses (Johnson & Flagler, 2013; Yousey, 2013).

The UCS creates an interactive, meaningful experience, mimicking "real world" practice and allows the student to "think like a nurse" (Benner, 2012). The UCS emulates nursing practice by revealing data over time as the case progresses and is unpredictable to the student. Students can follow a patient over time, revealing new information as the case unfolds. The cases involve complex problems and scenarios with missing information, adaptable to the level of the student that builds knowledge, skills, and critical thinking in a safe environment (Cronenwett, Sherwood, & Gelmon, 2009).

Currently, the NLN-ACE.S framework provides a scripted UCS to guide faculty in integrating geriatric content across the curriculum. The ACE.S - UCS is designed to combine storytelling with simulation to guide the design and implementation of Essential Knowledge Domains and Nursing Actions to advance the care of older adults. Ready to use instructional strategies combine opportunities for student pre-simulation activities, faculty-led discussions, peer-to-peer communication and collaboration, evidence-based assessment tools, and debriefing/guided reflection questions.

The first-person monologue used by faculty delivers a case study that is complex and contains content (aging, adult health, and medical-surgical) adaptable to the level of the pre-licensure nursing student. The simulated scripts are free and ready to use from the NLN ACE.S website with links to evidence-based assessment tools. Characteristics in these scripted cases include: missing or unpredictable information; varied settings; family dynamics and role strain; common syndromes of aging; differences in responses of older adults to illness; opportunity to assess risk and benefits in context of the individual's preferences and values; evidence-based practice, use of validated tools, and interprofessional team approach. Learners experience a clinical situation and build competency in critical thinking, nurse-to-nurse communication, and interprofessional collaboration (NLN, 2010).

Unfolding Case Study

Porter-Wenzlaff (2013) described the UCS as an innovative teaching-learning opportunity that builds competency. In the UCS, knowledge, skills and attitude are integrated into meaningful constructs. The case can be staged to increase in complexity and scope over time while allowing for student reflection. The use of continuous

assessment and faculty feedback provides a safe learning environment that facilitates and encourages thinking and reflecting while building on current problem-solving skills ((Reese, 2011; Sanstrom, 2006). Preliminary work in this field focused primarily on the student perception of unfolding case studies (Day, 2011; Durham & Sherwood, 2008; Reese, 2011). For example, Durham and Sherwood (2008) used an unfolding case study in a learning activity as a way for students to role model the knowledge, skills, and attitude of QSEN competencies when caring for a patient with a urinary tract infection (UTI). In this simulation experience, nurse educators used role-play to mimic the "real world" practice of nursing while keeping the patient safe. This exercise required little props and included the case scenario with the script, facilitator roles and responsibilities, guided debriefing, and SBAR guidelines adapted to high-fidelity human patient simulators. At the end of the exercise, students were asked to reflect on their practice in the context of providing patient care and examine situations in which quality and safety could be improved.

Berndt et al., (2015) used a descriptive, non-experimental design to study the effectiveness on student perception of a Collaborative Classroom Simulation(CCS) using unfolding case scenarios in 98 junior-level baccalaureate nursing students in their second semester at a private liberal arts college in the mid-west. Researchers noted insufficient evidence on best practices for incorporating unfolding simulated case scenarios in the nursing curriculum as motivation for the study. No theoretical framework was used. The researchers described the unfolding case simulation as "a patient scenario that evolves throughout the experience, allowing opportunities for students to evaluate the effectiveness of their interventions and modify them as needed" (p. 401). In this study,

the CCS method encouraged active participation from the class. The sample was drawn from two cohorts of nursing students enrolled in a medical-surgical course. Four sessions were offered to accommodate two separate cohorts in groups of 14. Students participated in the simulation in groups of 14. Student perception was not defined but measured using eleven survey questions on a five-point Likert-type scale, with scores ranging from 1 (strongly disagree) to 5 (strongly agree). The goal of the CCS simulation was to promote clinical judgment, enhance collaboration, reduce anxiety, and implement an effective pedagogy for learning. The CCS simulation was well received by the students as an effective active learning experience for the student in critical reasoning and increasing clinical judgment. Ten of the 11 questions were rated highly (4.26 4.87). The question, "This type of simulation experience decreased your anxiety" received a lower rating (3.69). Two open-ended questions addressed how the collaborative simulation could be improved and the strengths of the collaborative simulation. Eleven percent (11%) of the comments mentioned increasing confidence and decreasing anxiety as strengths. Although there was no clear definition or description of clinical judgment in this study, students commented on the opportunity for collaboration, clinical judgment, and participation as both active participation and observer was viewed as a strength in the experience. Thirty-nine (39%) percent of the statements were positive responses to the questions "How could the simulation experience be improved," with no suggestions for improvement. Responses with suggestions for improvement included technological issues and use of video conferencing or audio quality. Of the responses, thirteen statements recommended the need for more time to allow students in the room to think before

receiving input from the large classrooms. Seven statements mentioned the need for more preparation time before going into the simulations room.

Limitations of this study included an inability to distinguish between the active participant and observer roles. Additionally, Berndt et al., (2015) indicated that the survey questions used to describe the potential reduction in anxiety only pertained to the unfolding simulation and not potential anxiety for future clinical experiences, making it difficult to distinguish results for confidence and anxiety clearly. This limitation would require some modification to the survey to increase its applicability and usefulness to nursing education. One surprising finding in this study was the minimal faculty time used to offer the CCS method to a large group of students. Two faculty members were required to implement the simulation experience, by utilizing web cameras and Skype technology which allowed students the benefit of being both participants and observers. Researchers concluded that the use of CCS through unfolding case simulations has the potential to affect critical reasoning, student learning, and increasing clinical judgment and should be explored further as an active learning strategy.

Contrarily, Ghafourifard, Haririan, and Aghajanloo's (2013) research study claimed that the case-based teaching method improved reading comprehension skills when compared to lecture but failed to provide adequate evidence using a quasi-experimental design. The aim of the study was not to examine cause-and-effect relationships between variables but to assess the opinion of nursing students in case-based teaching and compare it with the lecture method. The researchers failed to identify the independent and dependent variables. This research study included thirty (n 30) senior level baccalaureate students in their intensive care curriculum in the Nursing and

Midwifery program in Zanjan, Iran. Approximately, 53.3% were female, and 46.7% were male. All (n 30) the students were single, and the mean age was 22.35 years (SD 1.8).

Kaddoura's (2011) five stages of teaching was used as the theoretical framework. According to Kaddoura, teaching is effective when using case studies include: (1) a focus on the most important concepts to be learned; (2) teachers' consideration of different questions about the case; (3) an open, safe, and non-threatening learning environment to facilitate students' participation; (4) engagement of all students; (5) teacher summarizes the key points. The situation opened with a problem that required decision-making to solve. Students could listen and take notes and then reflect. Open-ended questions were presented, and the teacher sequentially presented lab tests, symptoms, medical graphics, and treatments. The teacher introduced the diagnosis and further asked questions so students could learn the disease gradually. Each session was divided into two parts each lasting 45 minutes. The first part, acute renal failure, was presented using the teaching method. The second part, chronic renal failure, was presented using the lecture teaching method.

The teacher facilitated the discussion in each session to include case data, classroom discussions, and summarizing remarks. The students were asked to compare the two methods at the end of the second session. A researcher-generated questionnaire included 20 items, that asked students to indicate on a 5-point Likert-type scale (absolutely agree, agree, no idea, disagree, absolutely disagree) their opinion about each teaching method. One additional question elicited student comments regarding their satisfaction with case-based teaching method in a 0-10-point scale. The rationale for using the questionnaire is unclear and not convincing. Content validity was demonstrated

with Cronbach's alpha of 0.85. The researchers noted that data was analyzed by another individual to prevent bias but did not disclose the experience or qualifications of the individual.

A Chi-square analysis revealed no difference between males and females about case-based teaching as compared with the lecture. Over half of the study participants (57.1%), agreed that the case-based teaching method increased students' motivation for learning and stimulated active participation when compared with the lecture teaching method. The researchers noted that when students were in lecture only, they were less attentive and interactive. In addition, (61.9%) of study participants said that the teaching method covered the course objectives better and increased knowledge retention more than the lecture method. Most of the students (85.4%) were highly satisfied with teaching and commented case-based teaching was an overall better method. Students were highly satisfied with the method with a mean score of 8.38 + 1.8 in a scale range from 0 to 10. The study recognized a need for the use of traditional teaching methods with novice nursing students in teaching unfamiliar information and how to use the information in nursing care.

Additionally, a mixed methods study conducted by Himes and Ravert (2012) was designed to determine whether participation in the unfolding scripted case studies using situated peer coaching would have a positive effect on student perception, student satisfaction, and self-evaluation. This study arose out of a key learning need identified by university nursing students in 2010 course feedback to increase experiential learning. A quasi-experimental design with no control group was implemented to analyze whether a

significant increase in student ratings and self-evaluations of performance would be seen in the post-intervention data.

The first research question generated in the study was, “Will student ratings of the Fundamental Skills Laboratory change after implementing situated peer coaching with scripted unfolding case studies?” The second research question was, “How do students’ self-evaluations evolve over time and across laboratories when implementing situated peer coaching with scripted unfolding case studies in the Fundamentals Skills Laboratory?” The third research question was, “What are the students’ reactions to situated peer coaching with scripted unfolding case studies in the Fundaments Skills Laboratory?”

The study group received the unfolding case study with situated peer coaching, student focus on safety issues, practice collaborative communication, performed psychomotor skills and critical thinking at each laboratory session throughout a 14-week academic semester. The Simulation Evaluation tool was used to assess students’ self-evaluations in five areas immediately after each laboratory, with Cronbach alpha range from .809 - .924. The Simulation Evaluation tool also allowed for written comments of perceptions of learning. The University Student Ratings tool, widely used at the university, measured student satisfaction with the course and the instructor at the end of the semester. Participants completed the instruments at the end of each lab session. The sample population consisted of 104 nursing students in the Fundamentals skills laboratory. A majority of participants were Caucasian (n 97, 93%) and female (n 96, 92%) and ranged in age from 19-37 years. Half of the participants were employed with 16.3% working in healthcare related positions.

Page and Daley's (2009) situated cognition and Benner, Sutphen, Leonard and Day's (2010) situated peering coaching learning frameworks were adopted to guide the development of the teaching strategy. The researcher's approach to situated cognition allows the students with an opportunity to think through a clinical situation, and practice psychomotor skills, with individualized feedback, frequent prompting, and coaching from same-level peers. Instructors provide the initial direction and demonstration then pair students for each scripted unfolding case scenario. The scripted case adds an extra layer to the instructional strategy by including the conversation that requires the participants to converse and play their respective roles. The script provides probing questions, actions, and expected responses of the student. This format allows the instructor to monitor students and to gain additional feedback and insight. The scripted case provides competencies outlined by the Quality and Safety Education for Nurses project (QSEN) which included patient-centered care, teamwork and collaboration, and safety competencies. Students were also instructed to prepare by reading assignments, attending a lecture with theory content pertinent to the skill, and viewing videos of skills, and taking a group quiz.

The first research question results, using analysis of covariance (ANCOVA) revealed the Implementation of Situated Peer Coaching using Unfolding Case Studies, while controlling for covariate of instructor rating, was not statistically significant ($p>.05$) when comparing the new method and old method, indicating the educational intervention had no effect on student ratings. Overall, students rated themselves high in each category: active student involvement; amount learned; explained concepts effectively; materials and activities effective; and overall course.

The second research question results, using a repeated-measures analysis of variance, (ANOVA), revealed a statistically significant time effect, Wilk's A .180, F (8, 65) 36.92, $p<.000$ for laboratory number and summed scores on the students' self-assessments using the Simulation Evaluation tool. Follow-up tests indicated a significant linear effect with means of slight increases over time, F (1,72) 11.85, $p<.001$. One exception to the slight increase was in laboratory number four (M 23.30, SD 3.61), which is the first laboratory students administer injections. In laboratory four, students' self-ratings by laboratory indicated students perceived their overall performance higher than any of the other laboratories.

The third research question results, using thematic analysis of students' comments revealed five major themes: student preparation; communicating with the "patient;" working with situated peer coaching; critical thinking; and learning through scenarios. Open coding identified significant experiences and feelings of the students. Students commented that they: felt better prepared to report to the Fundamentals Skills Laboratory; could practice their communication skills with patients; felt less intimidated by working in pairs in a friendly environment and could receive instant feedback, and could also practice critical thinking skills. Some of the comments included, "felt like a real nurse," and "felt good about my accomplishments" (p. 15). Students used the personalized feedback as motivation and self-regulation in learning. Overall, students supported the use of situated peer coaching with scripted unfolding case studies.

This study tested an educational strategy that may influence students' performance in the clinical setting. The study concluded that situated peer coaching through scripted unfolding case studies in the Fundamentals Skills Laboratory could give

students an opportunity to more than psychomotor skills. In addition, students would be engaged in a realistic clinical learning experience while providing safe interactive patient care focusing on nursing roles and attitudes. This study corroborated previous investigations that found scripted educational interventions can influence student perception in clinical competency in safety, communication, performance skills, and critical thinking. Researchers recommended future studies using e a crossover control group would help with describing differences between instructor demonstrations and instructor demonstrations followed by student practice not included in this study.

Not only did Mills et al., (2014) mixed methods research study revealed an increase in students' level of satisfaction after being exposed to an unfolding case study in a high-fidelity simulation, self-confidence was also enhanced in developing clinical skills for 47 first year undergraduate nursing students. This research study utilized quantitative and qualitative strategies implemented sequentially to achieve the aim of evaluating participants' satisfaction with a new model of teaching clinical skills using unfolding case studies in a high-fidelity simulation. No theoretical framework was identified in this study. The researchers used an unfolding case study to replicate a real-life clinical situation while caring for two standardized patients conducted over 4 x 6 hours' simulation sessions. This simulation combined elements of video playback and debriefing of students caring for the live patient, who role-played in a simulated hospital ward environment. Unique in this study was the element of the standardized patient trained to simulate a patient with a medical condition. All first-year undergraduate nursing students (n 95) in their first year of clinical practice participated in the simulation component, but only 47 students (49%) agreed to participate in this study and

complete the survey. No other demographic information was disclosed by the researchers on the characteristics of student participants. The students' clinical evaluation on fundamental skills taught included performing a basic neurological assessment, vital signs monitoring, assisting the patient with activities of living like feeding and hygiene, wound assessment, and medication administration.

Three instruments (Student Satisfaction and Self-Confidence in Learning, Education Practices Questionnaire, and Simulation Design Scales) were used in the quantitative part of the study to measure student satisfaction, self-confidence in learning, educational practices, and simulation design respectively. All three instruments were developed and validated by the National League of Nursing and used in previous simulation studies. Descriptive statistics were restricted to range, mean and standard deviation because of the small sample size.

Students' experience of simulated learning was explored using, a semi-structured interview. Ten interviews were conducted with eight of the ten audiotaped and transcribed by professionals. The last two interviews were captured using field notes. Open coding captured data from interview transcripts and field notes. The open codes were then grouped, which resulted in two themes: watching and being watched and putting it together. Students could visualize how to transfer acquired skills to the work environment by thinking on their feet and managing a patient and the situation. Also, watching themselves on the video playback was a valuable learning experience that enabled the student to identify gaps in their skills practice.

Researchers noted a larger sample size would have provided a broader insight into the experience. Students reported that the simulation sessions provided an opportunity to practice on real patients, think on their feet and respond to patient demands quickly. Exposure to a range of scenarios also better prepared them for what to expect in the clinical setting and enabled them to build up their confidence level. Students and academic faculty appreciated the quality of acting by the standardized patients and how this enhanced the reality of the scenario. Students commented that the use of the UCS made them feel like they were in a real situation and enabled them to connect theory and practice and prepare for upcoming clinical.

For student satisfaction and self-confidence in learning scale, investigators reported that high positive scores provided quantitative evidence of students' satisfaction with the teaching model. The overall mean satisfaction score was 4.6 (SD 0.4) with ranges from 3 (undecided) to 5 (strongly agree) for the five items which revealed students were very satisfied with the simulation using unfolding case studies. The overall mean in self-confidence was 4.3 (SD 0.7), with range scores in the Learning survey from 1 (strongly disagree) to 5 (strongly agree) also indicated students were very confident in their ability to learn and felt that active learning, collaboration, diverse ways of learning, and high expectations were very important to learning (Mills, et al., 2013).

For educational practices scale, the researchers reported that students indicated all four educational practices were important to learning. Ninety-five (95%) percent of all responses across the four areas were either 4 (important, 31%) or 5 (very important, 64%). Scores ranged from 2 (somewhat important) to 5 (very important) in collaboration

and active learning. Additionally, scores ranged from 3 (neutral) to 5 (very important) in diverse ways of learning and high expectations.

For simulation design scale, researchers reported the most common scores were 4(agree) and 5 (strongly agree) across the subsections of various aspects of simulation design including objectives and information, support, problem-solving, feedback/guided reflection, and fidelity/realism. Overall, student participants agreed that all aspects of the simulation design were important to students. The study supported the need for undergraduate nursing programs to consider this high-fidelity simulation model with unfolding case studies for students in the first year of clinical in the curriculum. Researchers recommended that a valuable measure of learning outcomes would have been to comparatively analyze grades of students who participated in the study to those who did not participate in the study.

Recently, in Kantar and Massouh's (2015), qualitative focus group study, researchers explored the perspectives of junior level undergraduate nursing students use of case-based learning in the development of professional skills. The use of the unfolding case infused into the existing curriculum through two adult health nursing courses resulted in the development of three learning practices: knowledge-base and cognition, know-how and clinical reasoning, and habit-shaping and dispositions. Benner's (2010) apprenticeship model, was the basis for exploring the role of case-based learning in providing students with the type of experience that assists in the development of professional skills. Bruner's (1961) constructivism and John Dewey's (1938) experientialism contributed to the assumptions that case based learning engages the individual in constructing knowledge and fosters discovery learning.

As mentioned by Kantar and Massouh (2015), the unfolding process of case-based learning emulates the work environment and serves to enhance the transition of nurses to practice. Against this context, the researchers sought to answer the question, what professional skills may be developed with case-based learning? A qualitative design allowed for open-ended, in-depth exploration of students' insights, values, and behaviors in using a case-based approach to understanding their influence on developing professional skills. Participating students were recruited through an email invitation. A convenience sample of (n 16) senior nursing students attending a three-year-baccalaureate nursing program in Lebanon agreed to participate through an email invitation. The student participants were divided into three interview groups. Each group contained four to six participants. The focus group interviews lasted 45 to 60 minutes. Data was collected through group participation with primary and secondary semi-structured interview questions during class discussions facilitated by the instructor. Participants were familiar with each other which created a robust discussion and valuable responses.

Thematic analysis using cross-group analysis and inductive constant comparison converged to further reveal four additional professional attributes: (1) salience of clinical knowledge, (2) multiple ways of learning, (3) professional self-concept, and (4) professional caring. Based on an analysis of the interview responses, it was found that students were satisfied with the professional abilities and skills gained by the influence of case studies. The researchers suggest that an instructional approach integrated into the curriculum that uses cases situated to emphasize learning practices of recognizing the particulars of a clinical situation, making sense of the data and informing decisions, and

reflection emulates the thinking of a nurse. Findings from this study support the use of case-based learning in building professional skills. The findings also addressed the concerns of shifting paradigms in higher education from the traditional nursing curriculum to a constructivist or experiential learning perspective to prepare nurses for the challenges of practice.

Contrarily, Dutra's (2013), qualitative multi-site case study research sought nurse educators' perspective instead of the student when examining how the implementation of unfolding case studies at a California baccalaureate school of nursing would enhance the didactic learning experience and increase students' level of thinking. Purposeful sampling of four faculty members from three educational sites was observed in natural environments. Two primary patterns were identified: Formal Implementation (FI) and Informal Implementation (II) of case studies. Two theoretical constructs, Information Processing Theory (IPT) and Dimensions of Thinking Framework (DTF) formed the conceptual basis for this research study. Assumptions in both, describe the implementation strategies for the use of teaching with case studies which shifts focus from the teacher teaching to the learner learning in an effort to foster higher-level thinking. Dutra defined an effective nurse educator as one,

> "who realizes the importance of how information is processed and have an understanding of the dynamic learning phases are a step ahead of other nurse educators when it comes to implementing teaching strategies that lead to higher levels of cognition. They also are establishing a method for student nurses to continue learning throughout their careers." (Dutra, 2013, p. 3)

Utilizing multi-sites in this case-study design allowed the researchers to document pedagogical interactions of effective nurse educators from a holistic view to gather detailed descriptions. Each faculty participant at each site represented a unique case with

shared common characteristics. On average, each faculty member had been a registered nurse for at least 22 years. All faculty members had either an MSN or PhD as the highest level of education. All four faculty members had at least 5-10 years of teaching experience with greater than four semesters experience teaching in their respective courses.

Data was collected during three site visits through observation and post-observational interviews based on the two research questions. The first research question elicited comments about how the educator implemented a case study based on components of the IPT theory concept of cognitive overload and the students' activity level during the learning process. The second research question elicited questions about how the nurse educator perceived that the case study enhanced a higher level of cognition using the DTF theory about components of metacognition, critical, and creative thinking. Data was analyzed through open coding.

Repetitive comparative analysis revealed rich data that further produced two subcategories of the primary patterns: formal implementation inside the classroom (FIIC) and the use of formal implementation outside the classroom (FIOC). FI case studies used a preplanned and written format pattern. In FI, students had access to cases before class and were also given via PowerPoint or as a separate handout. FIIC included prearranged class presentations, groups and individuals, included role-playing (impromptu and structured), between student to faculty, and student to student. FIIC used problem-based learning with structure and faculty as facilitator. FIOC, included assigned case studies with due dates, group, and individual projects, summative and formative evaluation, discussion board case studies, monitored by faculty, template specific case study reviews,

concept analysis, structured assignment format with due dates and the student could choose patients from clinical. The II case studies were impromptu and often reflected anecdotal notes of the personal clinical experiences of the faculty member. Faculty reported that they often used these mini cases in a lecture to describe specific concepts, show the progress of nursing care and physiological and emotional aspects of real- life nursing to keep students interested. Although these mini cases were not planned and not written into the syllabus or power point presentations, these were the cases that students cited as content remembering most often from their coursework.

The investigators concluded that findings of the study matched the themes developed with the guiding conceptual frameworks of the Information Processing Theory (IPT) and the Dimensions of Thinking (DOT) Framework. In the IPT, the concept of cognitive overload can hinder the learning process. Nurse educators in this study perceived that when faculty used various learning strategies, students were more actively involved in the learning process, the greater potential for learning occurred and helped to lessen cognitive overload. As the cases unfolded, students became more active in the process through questioning and answering the appropriateness of the nursing interventions and rationale for the interventions. The use of real-life case studies with attention to structure and content helped to integrate information within the didactic lecture portion, and the clinical setting, which faculty reported would enhance knowledge retention and the learning experience. In the DOT framework, the components of metacognition, creative and critical thinking are key dimensions in the thinking continuum. Each dimension overlaps and complements the other.

A surprising finding revealed that the case study approach while it transfers the responsibility of learning onto the student, it should be used alongside lecture to provide information and facilitate discussion. All four participant nurse educators agreed that simply lecturing was not consistent with a learner-centered environment. Having students engaged actively in the process was essential when the student is the focus, not the instructor. The researchers noted inaccurate reporting of the case study pedagogy and the possibility of exaggeration performance by each participant are among variables that could have influenced the findings. Researcher bias was another variable that may have influenced findings. The small sample size (n 4) also limits the generalizability of findings to other nurse educators. Recommendations from the study suggest future qualitative and quantitative types of inquiry with larger samples be conducted in schools of nursing to examine the effects of an unfolding case approach on experimental and comparative groups.

UCS and Knowledge Acquisition

In Hessler and Henderson (2013) a quasi-experimental pre-test, post-test study was conducted to examine the effect of interactive self-paced computerized case studies compared to traditional hand-written cases on student knowledge, attitude, and retention. These researchers hypothesized that the structure and design of interactive case studies combined with students' existing brain architecture, memory and ability would be an advantage in an undergraduate physical assessment course that is complex and technically challenging. Students in their first semester at a Midwestern school of nursing were invited to participate. All students but one agreed to take part in the study.

A convenience sample of 99 undergraduate nursing students was randomly assigned to either the interactive computerized case study group (intervention) or the written case study group (control). Student participants were between 21 and 55 years old. Most the students were female (n 95, 96%) and had been admitted to the school of nursing with grade point average as the only admission criteria.

Cognitive Load Theory (CLT) was the theoretical framework used and provided guidance into how learning best occurs. CLT suggests that learning in an environment is effective when consideration for a student's existing cognitive structure is combined with an instructor that thoroughly understands how a student is processing and storing information during methods of instruction. The use of interactive case studies as an instructional strategy provided students with immediate and corrective feedback which helped to segment or chunk information for complex health material and tasks to reduce the extraneous cognitive load. Both the interactive and hand-written paper case studies included lung, cardiac, and neurological physical assessments in the undergraduate course. Three interactive computerized cases developed by the researchers were assigned to the intervention group which used an electronic format focused on reducing the extraneous cognitive load in learning physical assessment. The learning objective of the interactive computerized cases was to help students put the pieces of a physical assessment together and learn how to utilize a full picture of physical assessment would lead to nursing assessments and subsequent interventions. The computerized cases were placed on PowerPoint file using the same pictures and texts but provided a more interactive experience. Students could click on pictures and hear sounds. This electronic format also allowed the student to use the computer mouse and click for immediate and

corrective feedback when answering questions and reviewing content. The written case assigned to the control group did not have the capability to hear sounds and students had to identify with paper and pencil where sounds were located. Both the intervention and control groups completed the self-report survey student cognitive load after the first semester and interactivity level of the intervention in the third semester of the program.

Knowledge was assessed by instructor generated quizzes. Both intervention and control groups were evaluated in their first semester for the pre-test and post-test follow-up quizzes in semester three assessed knowledge retention. Factor analysis revealed three main subscales of the survey: perceived cognitive load, interactivity/fun, and functionality. A one-way analysis of variance (ANOVA) showed no significant statistical difference in quiz scores between the intervention and control groups on the perception of cognitive load (t (97) 1.38, p 0.187). There was statistical significance between the two groups on measures of fun and interactivity, indicating that the students in the interactive case study intervention group (t (97) -7.352, p 0.000) rated their case study as more interactive and fun. There was no statistically significant difference between the intervention and control groups' quiz scores in the first semester. According to the researcher, the effect size was found to be small (d 0.161).

Attitude was assessed by survey data which revealed that 87% of the entire group of students thought the format of the interactive case study helped them to learn the material. Additionally, 85% believed the format helped in integrating the concepts discussed in lecture. Eighty-five percent also believed that interactive case studies should be the main part of the assignments in the physical assessment course to include integrating pictures and sound with written material. Retention data was also assessed

with quiz scores half way through the program using the same quiz items from the first semester. Retention data revealed that even though the intervention (interactive case study) group did score higher on each of the areas of physical assessment knowledge, the results were not statistically significant.

The results of this study showed that the interactive case study experience did decrease mental effort simply by completing the assignment. In fact, the interactivity students learned the concepts easier and retained the information for further recall at a higher rate over those students who engaged in the paper and pencil case study of the same patient scenario. Although the researchers concluded that the interactive case studies take considerable time and effort to develop, the Cognitive Load Theory (CLT) was useful in guiding nurse educators instructional design principles in how students learn and retain information. According to the researchers, the use of CLT only measured one dimension of cognitive load and not a true measurement of students' perceived mental effort in completing a task which may have provided additional insight into how students best learn. In conclusion, researchers recommended future studies consider educational and nursing theories that measure conceptual learning as well as psychomotor concepts that compare novice students for evaluating cognitive load when the purpose is to affect student knowledge, attitude and retention of content delivered.

Similarly, McCormick, Romero de Slavy, and Fuller's (2013) comparative quantitative study, using an experimental design used instructor generated tests to assess knowledge about Parkinson Disease in students after the unfolding case study simulation. Researchers reported higher post-test scores in knowledge and critical problem solving for the simulated unfolding case study when compared to a taped digital media classroom

lecture. Concerned about the gap between academic preparation using technology and the demands of real-world nursing practice in the care of chronic diseases in the elderly population, the researchers sought to compare the digital media classroom (DMC) lecture with YouTube video clips and a simulated unfolding case study. This study sought to answer the following research question: What effects technologies in the classroom setting has on students' knowledge regarding their ability to care for a patient with Parkinson disease?

A convenience sample of two cohorts (N 84) comprised of undergraduate nursing students enrolled in the course, *Health Assessment Across the Lifespan*, were recruited from a university school of nursing. Students participating in the study were enrolled in the same course between September 2011 and December 2011. Students were randomly assigned to the experimental and control groups. The experimental group participated in the low fidelity, unfolding case study simulation. The control group participated in the traditional lecture approach.

Pre-simulation activities were given to all students to complete one week before lecture. Pre-simulation activities included: reading an E-medicine article about Parkinson's disease, review of two commonly used Parkinson's rating scales (Hoehn and Yahr and the United Parkinson's Disease Rating Scale). A PowerPoint lecture was taped on neurological assessment using the DMC and YouTube video clips. It reviewed a general assessment of the neurological system to include how to test motor, reflexes, cranial nerves and the sensory system. A note-taking guide and electronic nursing documentation sheet were developed for the student to use. This guide included an outline to help the student gather information about the function and structure of the

nervous system. It allowed the student to record information about sensory, motor component of the assessment examination. It also contained a glossary of terms related to Parkinson's disease and neurological examination. Students used the electronic nursing document sheet to write a nurse's note after the simulation experience.

Three scenarios were developed for the unfolding case study experience, which simulated the early, middle and late stage of Parkinson disease. As the case unfolds, the student is required to think at a higher level on the nursing assessment of the older adults as the progression of disability with increasing complexity of patient symptoms.

Three groups were assigned with one faculty supervisor. In the laboratory, equipment was set up for a neurological assessment: reflex hammer, cotton ball, tongue blade, cinnamon sticks, penlight, stethoscope, blood pressure cuff, thermometer, feeding tube, intravenous fluid, and Foley catheter. Blank neurological assessment forms were to be completed by the students. Cards were given to students with patient information, medical orders, and dialogue for each family member. Each unfolding case scenario included patient's biological data, laboratory values, current medical list and an RN-to-RN report. Each stage of the case simulation indicated a progression of the disability with increasing complexity of the patient's symptoms, which required a higher level of assessment. Data was collected over a one-week period and was scheduled within a week of the general assessment of the neurological lecture.

An instructor-generated pre-test and post-test measured changes in knowledge. The tests, consisting of 10 questions were alternative style, including multiple choice, point and click, matching, and true/false. It is important to note that although the questions were written for the synthesis, analysis, and evaluation level of Bloom's

taxonomy, no consideration was mentioned that supported the used of instructor-generated tests or if reliability and validity of the exam were demonstrated. Both the control group and the experimental group completed the pre-test before the simulated unfolding case study. However, the experimental group took the post-test after completion of the simulated unfolding case study, and the control group took the post-test after the lecture. Following completion of the simulated unfolding case study, the control group then participated in a classroom presentation on case notes and group discussion on possible nursing diagnoses.

A within-group and between-group analysis was performed using repeated-measures analysis of variance to compare the effect on knowledge pre-test and post-test scores. Key findings answered the research question and suggested that the use of a simulated unfolding case study was a more effective teaching strategy than traditional classroom lecture on knowledge, especially as it pertains to educating Generation Y or the Net Generation. This finding was significant, in that the use of technology will engage Generation Y students characterized by their demand for immediate access to information. A UCS, allows the student to see the entire clinical picture and prepares the new graduate to be practice ready. A paired-sample pre-test/post-test measurement indicated a significant difference in scores for traditional lecture teaching (4.37/4.93) when compared with scores of simulated unfolding case study teaching method (4.69/6.22). A within-group analysis indicated that subjects in both the traditional lecture teaching and simulated unfolding case study had significant increases in post-test scores (p .40). The simulated unfolding case study had significantly higher (p .31) post-test scores compared to traditional lecture.

Researchers concluded that the use of case-based simulation has implications in clinical practice, in that it would allow the student an opportunity to develop the competencies of teamwork, delegation, leadership skills, communication and critical thinking in a supportive and safe environment (McCormick, Romero de Slavy, and Fuller, 2013). In addition, the use of an UCS maximizes available faculty and addresses the challenges nurse educators are faced with in clinical settings with limited mentorships, an increasingly aging population and critical shortages of healthcare workers.

Likewise, Majeed (2014) used a descriptive cross-over study design to compare the effects of didactic and case-based teaching on knowledge and student satisfaction among nursing students. The researcher discovered that despite many studies on case-based instruction in various disciplines, there is still insufficient evidence on the effect of case study teaching on student performance in examinations and testing in comparisons to traditional lecture in nursing education. Eighty-six (n 86) second-year baccalaureate undergraduate students were used as controls, at a nursing college in Saudi Arabia. Researchers reported no other description of the characteristics of student participants.

Students were taught in two sessions. The first session included a traditional didactic lecture on digestive physiology followed by a two-hour tutorial and then were evaluated. In the second session, the same students were taught renal physiology by the same instructor using five interactive case-based lectures, explaining the concept, summarizing the session and then followed by student discussions about the physiology of the case. The second session ended with a 2-hour case-based tutorial with exploratory questions related to the case. Students were then evaluated after the second session. The

same instructor delivered both teaching styles to the same group of students and assessed the performance unaware of which teaching method had been used to avoid bias.

A paired t-tests analysis showed that students performed significantly better when they received the didactic lecture (mean, 17.53) on their examinations than case-based teaching (mean, 16.47) (two-tailed p 0.003). However, 71% of students indicated in feedback that they perceived the case-based teaching experience helped to improve their knowledge about the content better than didactic lectures. Sixty-eight percent (68%) found that case-based teaching was more useful for understanding the content. Also, 67% felt that the assignments, tutorials, and laboratories in the case-based teaching method were more helpful in developing knowledge and skills designed for the course. Sixty-nine percent (69%) commented that a case-based course would be useful in the application of basic knowledge in a clinical situation. Sixty-five percent (65%) found that case-based teaching was more interesting than didactic lectures and asked that other topics be taught in the same format.

Overall, students were satisfied with using the case-based teaching method and considered their clinical reasoning, diagnostic interpretation and ability to think had improved. However, examination performance was not enhanced, after exposure to case-based instruction contrasting with previous studies. A major limitation in this study pertained to the lack of information on test item construction and validity and reliability of the multiple-choice questionnaire used to assess retention of knowledge. The researcher generated factual questions on the questionnaire used after each session whereas, questions on the questionnaire for evaluating case-based teaching tested cognitive skills. Furthermore, the researcher discovered that while traditional lectures

convey factual information, they are not likely to promote higher levels of learning, like analysis, problem-solving and critical thinking. While students find digestive physiology easier to understand over renal physiology, the use of a different teaching method for each content area may have limited findings. In conclusion, although there was not a significant difference in examination performance, after exposure to the interactive case scenarios, undergraduate nursing students found interactive case-based teaching more enjoyable and stimulating over didactic teaching. This study revealed the use of case-based teaching in nursing education as an alternative to traditional teaching strategies to make physiology for nursing students more attractive and easier to understand.

In a current study, Arrue and Caballero (2015) used a survey research design to evaluate student knowledge, skills and attitude using the case method to develop and implement a teaching sequence in the care of older adults. The rationale for this study was based on the need for a model that provided competency focused training in knowledge, skills, attitudes and values needed in nursing. Also, the researchers sought to explore an active methodology that would connect theory and practice, between prior knowledge and hands-on learning to adapt new syllabi. Nurse educators developed the case method in one (2011-2012) academic year and implemented the case across the curriculum the following academic year (2012-2013), in the *Geriatric Nursing* and *Relations and Communications in Nursing Care* subject modules. Nurse researchers surveyed undergraduate nursing students (n 70) in year two of their undergraduate nursing program at the University of the Basque Country, to evaluate the case method as a teaching strategy in acquiring the necessary knowledge, skills, attitudes, and values to deal with a confrontational geriatric patient. The Case Method included sequential data

about the patient, series of specific cross-curricular skills, the range of activities and teaching modes to complete to acquire the selected competency. The Case method strategy brought nursing students face-to-face with a disoriented older patient, diagnosed with Acute Confusional Syndrome, forcing them to analyze the situation, engage in a set of training activities, and come up with solutions. Students also were given the opportunity to develop certain competencies like planning, teamwork, communication, reflection and critical thinking that could encourage future habits in relating the geriatric content of various subjects. The cases were integrated into the curriculum for each of the subject modules adapted using the syllabus and implemented in the following academic year.

Students evaluated the teaching methodology based on the case method and the knowledge acquired. Rating surveys were used to monitor the process after the first session when the case was presented, second classroom session, and at the end of the plenary session. Students also rated their individual performance and their level of participation in the group. Learning outcomes for each competency evaluated the geriatric knowledge acquired for the expected specific contents.

Results indicated the student participants widely accepted the Case Method. Students reported the case method was satisfactory in acquiring knowledge and skill competencies. In conclusion, the Case Method was a successful teaching method to facilitate the acquisition of skills and was well received by the nursing students in resolving conflict when a geriatric patient is diagnosed with Acute Confusional Syndrome.

However, the time requirement for student preparation was a major limitation of concern to the students. Results indicated the students did spend on average two additional hours above estimates preparing outside of the classroom which may have interfered with completing all assigned tasks. The researchers discovered that although students were interested in being a part of the case-method activity, a vast majority of them had a job in addition to being a student. The researchers noted this type of student with this profile made it impossible to attend all classes. Nurse researchers addressed this limitation by encouraging the students on the first day to write down in minute detail the number of hours spent on each task. Researchers recommended future studies to include a thorough discussion with student participants about the methodology to familiarize them with the process and address student concerns.

Students also voiced concerns over feelings of being overwhelmed. The researchers concluded this was consistent with other studies, but factored in the belief that students were not in the habit of reading and synthesizing information. In this instance, the researchers again recommended future studies include a thorough discussion, before implementation about the case based methodology and its use in the first academic courses in the curriculum.

Another limitation included inadequate numbers of faculty available to work with large groups often seen in undergraduate nursing courses. In the case method approach, the continuous monitoring and assessment in groups is often exhausting and not conducive for individual evaluation. As previously mentioned, the use of ready to use cases reduces the time and number of faculty required to develop and implement content across the curriculum. According to Popil (2011), case study methodology that is

complex and/or leaves off missing data requires more planning and time commitment for both the instructor and student over the traditional lecture format limiting its use in nursing education.

Despite the time and human resource constraints, data analysis revealed a high level of participation for the case method. Overall, 73% of the nursing students shared the opinion that they were "learning more with this approach than with the traditional one" (p. 161) at the end of the process. In addition, 93% of the students achieved a passing grade. Students also indicated the case study method improved interest and motivation in geriatric content because it dealt with real situations which enhanced the student's academic performance.

This study revealed that with the Case Method, students applied newly acquired knowledge and skills to solve the problem, thereby stimulating reflection, critical thinking, and independent learning. Additionally, the case method learning method improved interest and motivation in the students. The researchers concluded the case method was a useful tool for developing desired competencies in geriatric nursing care and was well received by students.

Contrarily, Trobec and Starcic's (2015) findings in their quantitative and qualitative research study indicated no significant differences in knowledge between an online learning environment and traditional classroom using multiple case studies. The sample size consisted of 211 Slovenian first-year nursing students enrolled in a Philosophy and Professional Ethics in Nursing course. Participants were randomly assigned for the tutorials in groups of five or six. The experimental group was exposed to role-play and discussion of scenarios to solve real ethical problems in the online setting

compared to the control group in the traditional classroom setting discussing the scenarios.

The quantitative part of the study used the Moodle Learning Management system in the online environment to write questions and reflect. Three multiple prewritten case studies allowed for in-depth analysis in gaining insight into real situations. Researcher generated pre-test and post-test questionnaires on knowledge of ethical principles were developed specifically for the study. Multi-variant factor analysis of the instruments was applied for identifying measure characteristics of the instrument. The researchers confirmed construct validity and found that all the factor solutions were the single-factor ones with a high enough percentage of clarified variance. Reliability was confirmed by the Cronbach's alpha coefficient higher than 0.7. All students received the theoretical content of the course. A Mann-Whitney test revealed no statistically significant differences (all values are above 0.5) between the results of the experimental and control groups for Case A, B, and C. As a result, there was no difference in learning outcomes between the traditional classroom setting and the online setting group.

The qualitative part of the study used a multi-case study questionnaire to capture the students' opinion in reflective responses about how active learning methods of role play and discussion take place from the point of view of the teacher. Content analysis revealed five categories: (1) collaboration and teamwork in problem-solving, (2) communication and interpersonal relations, (3) autonomous decision-making, (4) motivation and approach to learning, and (5) teacher support for learning. Researchers used member checks, peer review and triangulation of techniques and resources of data

collection to ensure validity, credibility, and trustworthiness to minimize the limitation of subjective nature of qualitative analysis and interpretations.

Significant in this study, was how role play supported by small group discussion of prewritten scenarios and peer support plays an integral part and provides an effective learning experience in developing higher level thinking. Researchers further discussed that during role-play, students have an opportunity to reflect on perceptions, build communication, interpersonal relationships and collaborate, competencies needed in a healthcare worker. In conclusion, this study suggested future inquiry in the various learning methods and their effect on various features of ethical competency.

In a study conducted by Howard, Ross, Mitchell, and Nelson (2010), it was found that a customized standardized exam was useful in measuring knowledge before and after the implementation of an interactive case study educational intervention. Although there was no significant increase in knowledge post-test scores for the interactive case study participants, the researcher judged the HESI custom exam to be a valid measure of knowledge and the student's ability to apply the content to a clinical problem. A quantitative, quasi-experimental study compared human patient simulators (HPS) and interactive case studies (ICS) on knowledge and student perception in senior level college students (n 13 baccalaureate, n 13 accelerated-baccalaureate, n 23 diploma) from three different nursing programs. A two-group, pre-test post-test design was used in which the HESI standardized exam was administered before and after the implementation of human patient simulators (HPS) and interactive case study (ICS) educational interventions. Because faculty highly regard the use ICS instruction, as a successful teaching strategy to enhance clinical decision-making and the time and cost of resources associated with HPS,

require additional faculty, and space, researchers sought to determine if a change in knowledge occurred as result of the teaching method. No theoretical framework was used. The HPS educational intervention included a PowerPoint presentation on patient care, orientation to the HPS, role-play, head-to-toe assessment, and debriefing. The ICS educational intervention included the same PowerPoint presentation on patient care, medical-surgical textbooks, and a copy of ACS and stroke case studies, group discussions, and instructor facilitation. Both educational interventions included a scenario in the same subject matter of the care of a patient with acute coronary syndrome (ACS) and the care of a patient with acute ischemic stroke. In order to control for extraneous variables, identical procedures to conduct the study were followed. The pre-test and post-test were developed using the same test blueprint with different test items. The same post-test was administered to both groups immediately following the intervention, and all students completed the Simulation and Case Study Evaluation Survey following the post-test.

Researchers used HESI custom pre-test and post-test examinations to assess knowledge in all students. The rationale for the use of HESI included evidence of (a) high predictive nature of NCLEX-RN success; (b) demonstrated reliability and validity of exams administered in previous nursing curricula; (c) test items used to create the custom HESI exams originated from the same database used to design all the HESI examinations; and (d) HESI test items met the same rigorous standards, in exit examinations and specialty examinations. Each custom HESI exam included 20-items designed by HESI and previously reviewed and judged to be a valid measure of the student's knowledge by the primary investigator. The average difficulty level for the pre-

test was 0.70, and the average difficulty level for the post-test was 0.69, The estimated reliability coefficient for the pre-test was 0.93, and the estimated reliability coefficient for the post-test was 0.94 which indicated the pre-test and the post-test exams were similar to test blueprint and psychometric properties.

Student perceptions were measured using a researcher-developed questionnaire, the Simulation and Case Study Evaluation Survey, which was immediately given to the study participants following the post-test. Internal consistency was determined by a (0.87), indicating the instrument's reliability. The questionnaire was a Likert-type scale which assessed the student's perceptions of their experience with either the ICS or HPS. More students responded favorably to the HPS educational intervention over the ICS educational intervention. Positive responses reported that the HPS helped in understanding concepts, stimulated critical thinking, and decreased anxiety. Independent-samples t tests were used to measure differences between the two intervention groups indicated no significant difference between the ICS and HPS.

Statistically significant increases in post-test scores, when compared to pre-test scores, were found in students in the human patient simulator (HPS) than those in the interactive case study (ICS) group on post-test HESI examination. There was no significant difference in student scores among the three types of nursing programs. It is unclear why the ICS group decreased from the average pre-test score by 116.09 points (17.32%) when the average post-test HESI score for the HPS group increased over the average pre-test score by 24.88 points (3.49%).

Confounding variables such as lack of motivation and interest in older technology, lack of faculty experience, and a different passive manner in which the ICS

intervention was taught was considered by the researchers as possible reasons for the decrease in the ICS group's post-test results of this study. In their analysis of findings, Howard, Ross, Mitchell, and Nelson (2015) questioned the influence of personal bias of the primary investigator. This analysis is understandable since the primary investigator was both faculty facilitator for students in the HPS group and creator of HPS scenario.

A one-way, between-subjects, Analysis of Covariance (ANCOVA), while controlling for differences in the pre-test scores, measured the difference in adjusted mean HPS and ICS post-test HESI examination scores indicated the HPS group scored significantly higher ($P<.05$) than the ICS group. An ANCOVA was also used to determine if there was a difference in post-test HESI scores in program types. No significant differences were found in baccalaureate, accelerated-baccalaureate, and diploma program type.

These findings are important because they demonstrate the usefulness of a standardized exam to evaluate the effect of the interactive case study educational intervention on student knowledge. HESI is commonly used in baccalaureate nursing education as a method of standardized testing with wide variations in use and outcomes (Sosa & Sethares, 2015). "A standardized test is one in which the procedures, administration, materials, and scoring rules are fixed so that as far as possible the assessment is the same at different times and places" (Nitko & Brookhart, YEAR, p. 514). In addition, the use of a standardized test includes an added benefit in that students find the tests objective and fair, with quick feedback, and allows the student to focus and remediate on important content in the curriculum (Pro & Con Argument, 2013).

Research indicates that instructor-generated test questions often contain errors, flaws and test lower forms of thinking in students such as knowledge or recall (Tarrant, Knierim, Hayes & Ware, 2006). There is limited research evidence that supports the use of HESI (Buckner, 2013). Furthermore, Sosa and Sethares (2015) maintain that nursing faculty should carefully consider the preliminary ability of HESI exams to predict program and NCLEX-RN success.

In conclusion, the use of a standardized test in measuring knowledge is useful both for the nursing student and academic faculty (NLN, 2012). The HESI custom exam, employed in this study assessed knowledge in course content in baccalaureate, accelerated baccalaureate, and diploma nursing students. Students had an opportunity to gain insight and information about their knowledge compared to other students, in the other two programs and national norms. Faculty were also provided with information to help.

UCS and Handoff Communication Skill Performance

Kesten (2011) conducted an experimental study using the pre-test post-test design to examine role-play using Situation, Background, Assessment, Recommendation (SBAR) standardized communication technique supported by scripted case scenarios in 115 senior nursing students. The intervention group (didactic plus role-play) scored significantly higher when compared to the control group (didactic instruction only) in mean performance scores. The researcher sought to address the gap in evidence regarding the best method for providing skilled communication education to nursing students. The researcher also noted anecdotal reports of SBAR used in nurse-physician and nurse-to-

nurse communication were rapidly increasing with limited evidence to support its use on patient and learning outcomes.

Previous studies revealed a variety of instructional methods, variability in methods for observation of communication behavior and diverse evaluation tools. Of the few studies that specifically examined nurse communication skills, role-play and skill practice was the common teaching strategy with positive effects on knowledge and attitude. Case instruction was also linked to higher level learning and critical thinking. No theoretical framework was identified in this research study.

The intervention and control groups were not significantly different in age, gender, type of program or used English as a primary language. Most the participants were female (91.3%), with ages ranged from 20-48 years. Half of the sample were traditional (n 58, 50.4%) senior nursing students and half were second-degree seeking (n 57, 49.6%). Permission to conduct the study was obtained from the university's institutional ethics review board.

Because no instruments were located from the literature to measure skilled communication knowledge of SBAR, the researcher developed and piloted the SBAR Knowledge Pre-test, Post-test instrument to assess communication knowledge. Content validity was established by faculty experts. Faculty experts reviewed the testing instrument and made recommendations for revisions. The second instrument also developed and pilot-tested by the researcher measured communication performance, by observing the behavior of students' compliance with the SBAR method using the SBAR Observed Behavior Checklist Tool. Interrater reliability on the SBAR Observed Behavior Checklist Tool was established using two independent raters. The raters observed forty

students. Interrater reliability was established using Cohen's Kappa (Kappa 0.857, $p<0.001$) to measure agreement between the evaluations of the two reviewers.

All students received the didactic instruction at mid-semester. A knowledge pre-test was administered at the beginning of instruction and knowledge post-test was given to the entire group of students at the end of the semester. Didactic instruction included a skilled communication education module. The education module consisted of a one-hour lecture in the classroom on the theory and science to improve communication to prevent errors and an introduction to the SBAR method of communication. PowerPoint slides were delivered to the students and included the didactic content on the SBAR steps between the nurse and provider. An SBAR Skilled Communication handout to organize the activity and labeled with the four steps (Situation, Background, Assessment, and Recommendation). The SBAR handout includes a fill-in blank section next to each subtopic.

Case scenarios using scripted role-play instruction for the intervention group consisted of a 40-minute exercise, SBAR handout with instruction, skill practice time, and debriefing conducted by the communication faculty expert. Faculty demonstrated the appropriate use of SBAR given a case scenario of a clinical patient situation. Students were instructed to organize the content into an SBAR format. The intervention group was then divided into pairs and received four scripted case scenarios for role-playing skill practice to communication using the SBAR. Each student participated in four role-play scenarios with an additional 20 minutes of debriefing with the faculty. The simulation was developed to include theory content and clinical content in an emergency and critical care unit. Students were instructed to assess the patient and prioritize care as in an actual

emergency. Control group participants completed the role-play exercise at the end of the semester. Content validity was established by consulting four expert faculty members.

Results indicated mean scores increased on the Skilled Communication Knowledge for all students from 62.1 (SD 14.5) to 85.2 (SD 10.5). A paired sample *t*-tests reflected a statistically significant difference (*t* 14.5, *p*<0.001) in mean change in knowledge (M 23.1, SD 16.1). Overall, both groups demonstrated a significant gain in communication knowledge from the instruction. However, the mean performance scores were statistically significantly higher in the didactic plus role-play intervention group than those in the didactic instruction alone control group (*t* -2.6, *p* 0.005). This finding was significant, in that it reinforced previous studies that suggested role-play, debriefing and feedback are effective educational interventions that improve performance after simulation teaching in handoff communication skills (Gordon & Findley, 2011).

Prior exposure of students to SBAR may have influenced communication in knowledge and skill performance of the teaching approach. In addition, administering the post-test at the end of the semester instead of testing at several subsequent intervals may have limited study findings. The author concluded with a recommendation for future studies to include didactic and role-play instruction of the SBAR tool in a broader student population with multiple scenarios as evidence to encourage disciplines within and outside of nursing to implement the teaching method.

Similarly, Avallone and Weidemann (2015) saw an improvement in nursing student handoff communication in their experimental pilot study to assess the effect of a Nursing Handoff Educational Bundle (NHEB) supported by case studies. The researchers used a quasi-experimental pre-test/post-test design in a convenience sample of 28

accelerated baccalaureate nursing students. Researchers discovered the lack of published materials describing the effects of handoff education on pre-licensure nursing students' communication skills limited the scope for other researchers to build on the educational interventions. This deficiency in evidence of handoff preparation for student nurses and new nurses poses a latent patient safety risk giving rise to the authors designing an educational intervention for nursing students that replicated a successful pilot study for medical residents at nine participating teaching institutions. Most the sample population were females (86%) versus males (14%), with a mean age of 30.3 years and age ranged from 24 to 46 years. The intervention group (n 14) received the NHEB, and the control group (n 14) did not receive the bundle intervention. The Systems Engineering Initiative Model of Work System and Patient Safety (SEIPS) was used as a theoretical framework to implement the NHEB. This theoretical framework is a teamwork and simulation-based intervention designed to improve safety. It focuses on the complex work system or structure that affects the care process of handoffs, which impacts quality care, employee and organization outcomes and patient outcomes. It emphasizes the importance of learning from error to prevent occurrences.

The educational intervention or bundle included an educational workshop, standardized handoff format, clinical faculty education, and structured, formative evaluation of student handoffs. The researcher incorporated three role-playing simulated case scenarios into a handoff provider and receiver workshop. Each student was given the opportunity to practice as the handoff provider, handoff recipient, and observer using a partially completed Situation-Background-Assessment-Recommendation (SBAR) tool. Trained clinical faculty observed each participant as handoff provider and recipient.

Utilizing the Handoff Clinical Evaluation (CEX) tool, with Cronbach alpha of 0.95 in reliability testing, 28 students were evaluated to explore the quality of handoff provider and receiver. Unique in this pilot study was the focus on handoff communication using the Handoff CEX tool, which created a shared mental model necessary during patient handoffs. During nursing handoffs, the on-coming or provider caregiver constructs an overall picture of priority and pending care. The role of the receiver is just as critical to be an active participant in creating a shared common understanding of the patient and care. The participants in this study were all second-semester students enrolled in an Accelerated Bachelor of Science in a nursing program at a large university in the northeastern United States. The undergraduate students eligible to participate progressed from the second semester, summer 2014 to the third semester, fall 2014 in the same cohort participated in the study. Sites A and B were designated the intervention sites and sites C and D were designated the comparison sites. Students were then assigned to the sites based on clinical site placement by the School of Nursing faculty who were blinded to the study.

Analysis of an independent sample *t*-test revealed that in the intervention group, provider scores (M 4.64, SD 1.3) improved significantly over the control group change scores (M 1.5, SD 1.34) that did not participate in the NHEB. At the end of the 15 weeks, the Handoff recipient group scores (M 5.5, SD 1.01) significantly improved while the recipient control group that had not participated in the NHEB showed no improvement (M -.36, SD 1.39), (*t* 12.7, $p < .001$). Open-ended comments revealed most students listed role-play activity as the most effective part of the workshop. Students also requested additional examples of effective handoffs using the SBAR format. Overall,

the researcher concluded that exposure to an NHEB educational intervention improved handoff communication skills and provided an opportunity to practice evidence-based handoff skills with structured support. This pilot study also suggests that the NHEB may be a feasible way to incorporate handoff education and evaluation into prelicensure programs. Avallone and Weidemann acknowledged that results of the study should be interpreted with caution, insofar as the intervention was designed specifically for use with one cohort of nursing students. Furthermore, students had not been randomized into clinical groups, but the clinical sites were randomized and then students were placed at the sites. Researchers further recommended future inquiry to include larger sample sizes and multiple settings to evaluate the effectiveness of the NHEB.

UCS and Critical Thinking

According to Facione and Facione (2008), clinical reasoning and judgment are dependent on critical thinking skills. As an end component of the unfolding case study, critical thinking is the ability to think through, reason or problem solve as patient data is revealed (Popil, 2011). The potential for the UCS active learning strategy to develop and increase critical thinking lies in its ability to make students "think like a nurse," ask questions and use their knowledge and skill to answer those questions.

Yousey (2013) examined problem-solving and critical thinking skills among nursing students using an assigned unfolding case study in a public health course in an online RN-BSN program. This study used a survey design to examine students' perceptions of learning using unfolding case studies online. The purpose of the study was to investigate whether online RN-BSN students, presented with a broad range of abilities in problem-solving and clinical decision-making, who successfully completed the

unfolding case study, increased knowledge of public health nursing, creative problem solving and complex critical thinking in an online public health course.

The researcher's rationale for the study was based on the challenge that nurse educators face in the preparation of nurses to be expert in problem-solving and clinical decisions to function effectively in a complex health care environment. Accordingly, the UCS is one problem-based learning method that can be used in adult education as a strategy that is motivating, and provides the student with an opportunity to facilitate higher level creative problem solving and critical thinking skills and connects theory with practice for application in the clinical setting. However, few studies have used the UCS strategy in online nursing programs. The student's perception of the teaching method and their feelings about their metacognition and growth during the course were also explored. This research study was conceptualized using the *Essentials of Baccalaureate Education for Nursing Practice*, Kim's et al. framework (as cited in Yousey, 2012) for implementing unfolding case studies, and course and unit objectives.

Yousey (2013) used a convenience sample from an online RN-BSN program located in a school of nursing. Twenty-six students enrolled in the course and participated in the course assignment. The researchers did not include any other information or description about the characteristics of study participants. This public health nursing course was the final course in the online curriculum. The assignment was organized using a hypothetical situation in which participants assumed the role of supervisors in a home health agency. The assignment called for participants to educate new nurse employees in the care of clients with chronic illness in a community setting using an unfolding case study. The unfolding case was to be developed by participants in three stages, using a

template, over a four-weeks. The template developed based on Kim's et al. framework (as cited in Yousey 2012) for implementing unfolding case studies focused on structure, content, and process and integrated attributes of relevance, realistic, engaging, challenging, and instructional. Participants were also assigned to incorporate public health concepts with chronic illness using assessment, planning, implementing, and management of caring for clients and families in the learning activity. The learning assignment of developing an unfolding case study was to be completed by each participant independently, with no feedback or interaction from peers. Participants could seek faculty feedback and were given the opportunity to revise the unfolding case during the four-week period. In the final stage, participants completed the unfolding case study by answering questions supported by references, posting questions and feedback on a discussion board, and completing an eight-item survey questionnaire. The unfolding case study was evaluated by faculty using a six-item rubric based on course objectives at the end of the course. A fourteen-item short answer survey assessed the students' perceptions of their ability to problem solve and the awareness of their own metacognition and growth.

Feedback provided by the online surveys provided information on student perception of the learning experience, changes in problem-solving and use of the framework in developing the unfolding case study. Participants identified an increase in knowledge in public health nursing, community resources, critical thinking, and problem-solving. Each student successfully completed the assignment of the unfolding case study in four weeks. Completing the assignment in stages allowed participants to independently integrate and apply knowledge of public health content and chronic illness over time in

the course. The unfolding case study approach allowed the participants to be creative in developing their story as a basis for learning. This learning strategy provided faculty with both summative and formative evaluation of how students construct meaning. Participant feedback indicated that some students had difficulty in their problem-solving abilities by not integrating and applying knowledge in both public health content and chronic illness content by their varying responses. For example, some students commented they wanted to know, "the right answers" or thought that this assignment is something instructors "should do." Additionally, students reported more guidelines and structure would have helped them move through the process of completing the case study.

The researchers used instructor generated surveys based on course and unit objectives along with the essentials of baccalaureate education. One major limitation of the study was an insufficient description of the instrument's reliability and validity that measured the increase in knowledge of public health nursing, problem-solving, and the ability to apply concepts of chronic illness thus limiting the credibility of study results.

Additionally, Johnson et al. (2012) conducted a quasi-experimental, international, multi-site research study to determine the effect of expert role modeling on nursing students' clinical judgment supported by unfolding cases to teach geriatrics. Participants from four different prelicensure nursing programs in the United States (n 221) and one in the United Kingdom (n 54) participated in an unfolding simulation.

Bandura's (1997) concepts of observational learning and mastery modeling guided the design of the UCS. Observational learning occurs when the learner pays attention to the model, retains the behavior, produces action derived from recall, is then motivated to continue the behavior. Mastery modeling is a strategy that uses instructive

modeling, guided skill perfection, and transfer training to build intellectual, social and behavioral competencies. Both concepts emphasize the learner developing problem-solving and thinking skills by observing others.

Tanner's model of clinical judgment was used as the theory base for evaluating four aspects of the students' clinical judgment. According to Tanner, clinical judgment allows nurses to make complex decisions about care to include: noticing, interpreting, responding, and reflecting. Developing clinical judgment is critical to preparing future nurses to care for an aging population safely.

The study sample included nursing students in their first clinical course in the nursing program. The treatment groups viewed the expert role model video. The control group did not view the video. Participants were randomly assigned to intervention or control groups based on their scheduled simulation experience in the laboratory. Students drew cards and were randomly assigned first to the simulation phase and second, to the three nursing roles of team leader, medication nurse/educator or assessment nurse. The researchers reported that all control groups completed the simulation before the treatment groups to minimize interaction between groups. All students participated in the same Pre-simulation activities.

The use of a three-phase NLN-ACE.S scripted unfolding case scenarios provided guidance in implementing nurse care for the older adult in the nursing curriculum. Because of sparse evidence linking manikin-based simulation and clinical judgment, the purpose of the study was to determine whether there was a difference in clinical judgment after exposure to the expert role model. Previous studies suggest patient safety is at risk

because nurses are not taught to recognize key signs and symptoms of delirium in older adults.

A majority of the sample were female (88.7%), Caucasian (88.7%), and pursuing their first degree (90.5%). The treatment group included 140 students (114 US, 26 UK) and the control group included 135 (107 US, 28 UK) students. The treatment group viewed a video recording of the expert nurse who role-modeled clinical judgment during care of a geriatric patient with a hip fracture. The control group did not view the video recording before simulation. The researchers reported that to standardize sites, the use of regularly scheduled conference telephone calls with simulation faculty, the creation of a digital toolkit containing faculty training and simulation materials, and live video training. The toolkit included training and simulation materials, a protocol with instructions for actors, standardized patient charts, student activities, photographs, evaluation tools, and links to video recordings.

The three phases of the UCS each include Pre-simulation activities. Each student had the opportunity to participate as one of three roles: team leader, assessment nurse, or medication nurse/educator. Before the simulation, students assigned to the treatment groups viewed an expert role model video who modeled clinical judgment during the care of a geriatric patient. Students then participated in a 20-minute debriefing session led by simulation facilitators. Quantitative data was collected from the demographic questionnaire, evaluation of simulation activities and clinical judgment of primary nurses. A researcher-developed Likert scale was used to assess simulation activities. Scores ranged from 1 (strongly disagree) to 5 (very helpful). Descriptive tests were conducted on demographics and student satisfaction. The simulation resulted in mean rating items

ranging from 4.00 and 4.37 in both. The treatment and control groups agreed and strongly agreed that the simulation helped in learning to notice and respond to patient symptoms, relate concepts to the clinical setting, and improve confidence in their ability to care. U.S. Students also reported mean ratings for the control group of 4.23 (SD .83) and treatment group 4.19 (SD .78) indicating pre-simulation activities were helpful. The video of the nurse role model was reported to be the most useful of the activities with a mean rating of 4.59 (SD .61).

The Lasater Clinical Judgment Rubric instrument was used by trained observers to rate student clinical judgment (n 94). An independent samples t-test reported significant group difference (*p* .000) for the clinical judgment dimensions of noticing, interpreting, and responding between the treatment and control groups. A major limitation reported by the researchers included a pre-test/post-test design would better indicate the improvements of students in their geriatric simulation experience. Quantitative findings support combining expert role modeling with clinical simulation to improve students' clinical judgment in the care of older adults.

Lasater, Johnson, Ravert, and Rink's (2014) reported qualitative findings from Johnson's et al. (2012) study which explored the participants lived experience in viewing an expert nurse role model and the impact on the clinical judgment after exposure to an unfolding older adult simulation. The sample group of (n 275) pre-licensure nursing students completed questionnaires post-simulation and post-care. The first questionnaire was completed after viewing a video of an expert nurse role model and the second after caring for an older adult patient in the perioperative clinical setting. The dimensions (noticing, interpreting, responding, and reflecting) of Lasater 's Clinical Judgment Rubric

(2007b) were used to expand aspects of effective clinical reasoning, the relationship of clinical judgment and confidence and affirmed the role of an expert nurse role model.

Directed content analysis revealed three categories of data (general findings, post simulation, post-care). Triangulation included multiple lines of evidence, analyses, and perspectives and theories for consistency and confirmability. Student respondents demonstrated increased confidence after being exposed to the expert nurse role model in their ability to care for a simulated patient. An unexpected finding in this study related to the development of planning care and assumptions about geriatric patients. Students seemed to be unaware and unable to attend to the individual patient needs of an older adult as well as a lack of deep knowledge about the severity of the delirium phase which made linking clinical judgment aspects of noticing and interpreting difficult.

Additionally, the use of an unfolding case simulation allowed for subthemes to emerge: the developmental stage of learners; how learners think about their thinking; and their individual view of older adult patients. Researchers recommended nurse educators use collaborative learning strategies, group sessions, and debriefing to help students to apply the same level of clinical judgment to all.

More recently, Raurell-Torreda, Olivet-Pujol, Romero-Collado et al. (2015) hypothesized that case based learning would improve student satisfaction because the strategy connected theory and practice and encourages the development of critical thinking in their nonrandomized clinical trial. Students (n 101) enrolled in a medical-surgical course with no previous clinical practice (undergraduates), and nurses with clinical experience enrolled in continuing professional education (CPE) were compared at the same times. Undergraduate nursing students, enrolled in the *Adult Patients I* course,

were assigned to the traditional lecture and discussion (n 66) or lecture and discussion plus case-based learning (n-35). The CPE nurses (n 59) were used as a comparison group to assess the effects of previous clinical experience on learning outcomes. Students were not randomly assigned because to the intervention or control groups because the exposure to case-based learning was based on their course schedule (morning, control group; afternoon, intervention).

Previous studies indicated that the use of case studies allows students to develop five types of knowledge, skills, and abilities, problem-solving, critical thinking, clinical judgment, and communication. According to the researcher, a case study is useful for various purposes in nursing education when it illustrates principles of diagnostic process and outcomes, examines the relationship between cues and diagnosis, analyzes diagnostic possibilities, and evaluates diagnostic expertise.

The sample population consisted mainly of females (n 92, 61.30%), and ranged in ages 19-26. Most of the participants had previous health work experience (control group 39.7%; intervention group 55.9%). The primary independent variables were group membership (control, intervention, CPE). Secondary independent variables were sociodemographic variables (age, sex), previous university study, previous university study in health sciences, healthcare work experience, and the path to university admission. The researchers reported that control for potential confounding variables included considering selective variables as independent variables: previous university study in health sciences, previous university study, health-related work experience, and the path to university admission. These characteristics could give an advantage to groups because of their knowledge of the work environment and experience in the clinical

setting could help them proficiently handle the simulation. The dependent variable was the score on the OSPE simulation by study group (control, intervention, CPE).

Case-based learning (CBL) and the Bologna Process were used as a guide for university teaching and simulation for evaluation in this study. The CBL teaching methodology helps to improve competency and allows the students to integrate and apply knowledge, skills, and judgment, and communication skills. According to the authors, CBL allowed the students to connect theory to practice and decide how to plan and deliver care much like a nurse. The Bologna Process adopts a student-centered approach that promotes the student developing collaboration, communication, and group problem-solving skills.

Simulation was used to guide the evaluation of students by demonstrating procedures, decision-making, and critical thinking required by the nurse in day to day patient care. Two sessions were taught in the clinical core course, “Adult Patients I” clinical core course to second-year nursing students by two different instructors. The morning session included the control group and the afternoon session included the intervention group. The investigator controlled the exposure of groups to the intervention by assigned students to the treatment and control group based on their course schedule. The control group included traditional teaching methods of an 80-minute lecture and discussion for each of the 32 sessions. The intervention included a lecture and discussion for 50 minutes and small group work on one case for 30 minutes for each of the 32 sessions.

The CPE group was not included in the trial but participated in the simulation experience. The exclusion of this group from the trial allowed for a comparison of their skills with critical thinking and communication of the two groups of students. Intervention protocol included cases developed by a different instructor using critical thinking processes. An analysis of cases covering eight areas (medication, information on the current disease, laboratory data and diagnostic tests, current medical diagnoses, medical history, nursing diagnostics, physician's orders, outcome objectives) of nursing knowledge. Groups were self-selected for three to five students which allowed for work on care plans using North American Nursing Diagnosis Association (NANDA), Nursing Interventions Classification (NIC) and Nursing Outcomes Classification (NOC) taxonomy and discussions. Reference materials were used to work on the written case portion and helped to strengthen information search skills. Two different instructors taught course content. Student learning was assessed in simulation using a scenario-based objective structured clinical examination (OSCE) tool to score students using a human patient simulator. The cases used were validated by the National League for Nursing and compared for the undergraduate intervention and control groups and the CPE nurses group. The OSCE is a validated instrument with an interrater reliability of 95% and uses a checklist to score students skills and behaviors (patient safety and communication, assessment, diagnosis, intervention, and critical thinking). If the behavior is observed, the student scores a 1. If the behavior is not observed, the student scores a 0. Analysis of variance (ANOVA), posthoc analysis with Dunnett's test reported a significant difference in that the control group had lower scores than the intervention group on patient assessment (6.3 + 2.3 vs. 7.5 + 1.4, p .04) and a mean difference of -1.2 [95%

confidence interval (CI) 2.4 to -0.03]). The intervention group did not differ from the CPE nurses (7.5 + 1.4 vs 8.8 +1.5, *p* .06, mean difference, -1.3 {95% CI -2.6 to 0.04}). No significant difference was determined in the remaining categories. There was a significant difference between undergraduate and CPE nurses in patient evaluation and appropriate nursing interventions. The CPE nurses failed to observe basic safety precautions by committing more rules based errors than the undergraduate students, especially for patient identifications (77.2% vs. 55%, *p* .7) and checking allergies before administering medication (68.2% vs. 60%, *p* .1). The CPE nurses' clinical experience was not associated with better adherence to safety protocols.

One limitation reported by the authors was the lack of inter-observer reliability from the OSCE tool evaluation by only one professor. A second limitation, the use of different instructors with different communication and interpersonal skills to teach the same course content, may have introduced instructor bias. Recommendations for future studies included the use of two professors to allow for intra-class correlation of scores. Although the purpose of the research study was to assess communication and critical thinking skills of nursing students, there was not a clear definition of critical thinking and no instrument to measure. The OSCE tool includes critical thinking as a subtopic, not a major concept. The students performed better after the training than lecture and discussion. The learning helped to standardize the process of patient assessment which can contribute to consistency and quality in clinical practice.

Constructivist Learning Theory

Pobocik (2014), used the Constructivist educational theory and Benner's (1984) Novice to Expert practice development model to form the framework for this quasi-experimental study using a pre-test post-test design. Both philosophies challenge the nursing student to think when analyzing a situation or problem critically. The purpose of the study was to test the Constructivist theory by relating the Educational Electronic Documentation System (EEDS) supported by online unfolding cases to helping students use clinical judgment and accurately identify important patient data in 37 senior undergraduate nursing students.

The researcher's theoretical rationale was to address a gap in the current literature on teaching pedagogies that prepared nursing students for easy transition into health care settings. Students need realistic patient data and pragmatic nursing situations. Constructivist learning would allow students to expand their thinking on a situation and connect important concepts into a new context. The instructor, as a facilitator, provides assistance and guidance, by answering questions and/or clarifying misconceptions so that the student could develop clinical reasoning skills during the learning process. Students are then able to build on basic information and gather data when performing as an assessment on a patient.

A majority of the convenience sample was predominantly White (n 29, 94.87%) and female (n 28, 75.67%). The student participants ranged in ages between 21-28. The average GPAs of 67% of the participants were 3.0 3.4. The intervention group included 19 student participants, while the control group included 18 participants. Data was collected through a pre-test and post-test case study analysis over a three-week period.

The intervention group used the EEDS in the course for three unfolding case study class assignments. The control group did not use the EEDS for their unfolding case study class assignments.

The UCS was embedded in the EEDS to elicit information in the past and new knowledge, in theory, pneumonia, diabetic foot ulcer, and femur fracture. The three UCS allowed students to evaluate information, provide realistic assessments, develop nursing interventions, and create teaching plans. The related to the statement of the nursing diagnosis was then scored pre-test and post-test using the Accuracy Tool to determine if students accurately ranked the relevant patient cues in the UCS. The Accuracy Tool had a content validity index of 91.7. Four experts validated the case study responses identifying the most accurate responses. The Pearson product-moment correlations (case study 1 .96, case study 2 .97) were calculated to validate the case study responses identifying high to low accuracy of response.

A paired *t*-test analysis revealed statistically different group scores for the intervention group's pre-test to post-test (p 0.19), whereas the control group's scores (p .842) remained the same from pre-test to post-test. Therefore, the hypothesis that the EEDS would influence the nursing students' ability to identify accurate NDs was accepted. The second paired *t*-test analysis, revealed no statistical difference in group mean scores for the intervention pre-test (3.8) and post-test (3.3), therefore the hypothesis that the EEDS would influence the nursing students' confidence level was rejected. The final hypotheses were rejected after a Pearson-product-moment correlation of GPA and Accuracy Tool score, r -.051 revealed no statistical significance indicating a weak negative correlation.

The investigator noted that a small sample size limited findings, and recommended future studies include a larger population in different educational settings. Another limitation included the three UCSs developed by the EEDS company may have introduced bias in the research and may also have limited findings. The study concluded that students learning on an EEDS supported by unfolding case studies could identify critical cues in patient data (Pobocik, 2014). This study corroborated previous findings that an educational intervention that constructed student learning activities and assignments helped to enhance accuracy skills better prepare nursing students for the profession.

Similarly, the theory base of Debriefing for Meaningful Learning (DML) used in Forneris, Neal, Tiffany's et al., (2015) replication simulation study, is rooted in constructivist learning theory. The researchers sought to replicate Dreifuerst's 2012 findings that clinical reasoning was enhanced through structured debriefing supported by scripted unfolding case studies. The theory DML suggests that situated cognitive and reasoning skills used in problem-solving encountered in simulation parallel the experiences and reasoning skills used in real-world clinical practice. Researchers in this study used a quasi-experimental, pre-test post-test, repeated measure design to evaluate clinical reasoning and student perception of the DML method supported by scripted unfolding case studies during simulation debriefing in 153 undergraduate senior nursing students. The senior students across multiple sites were beginning their second year of course work at four baccalaureates faith-based private colleges of nursing in the mid-west. Researchers reported the student groups were homogenous but did not disclose additional information about the study participant's demographic characteristics.

The researchers compared the Debriefing for Meaningful Learning (DML), developed by Dreifuerst (2009) and the Outcome-Present State-Test Model (OPT) debriefing methods. The DML with underpinnings from Schon (1983) follows a structured reflective dialogue debriefing method using six components (engage, explore, explain, elaborate, evaluate and thinking). The OPT model grounded in constructivist learning theory suggests that reasoning skills and situated cognition are used to solve problems in a simulation that can be transferred to the clinical environment. The OPT model uses a checklist for faculty debriefing in categories that include organization, comparison, classification, evaluation, summarization, and analysis. In comparison to the DML process, that utilizes consistent reflective conversation to guide the learner in what is relevant and meaningful. Debriefing, a key component in simulation, influences student learning outcomes. According to Dreifuerst (2012), the DML is unique in that it provides the student an opportunity to discuss rationales, analyze and direct future action, and reflect on nursing knowledge from different perspectives and transform a new understanding to improve thinking. Faculty competent in debriefing often practice simulation principles of active learning, collaboration, and feedback (Jeffries, 2005). The unfolding case study developed by the National League of Nursing's Advancing Care Excellence for Seniors (ACE.S) simulation scenario, uses three scenarios scripted featuring a geriatric patient. The content prompts students in complications from dehydration, a urinary tract infection, and a complex transition process. This particular UCS was used because it featured common content (aging, adult health, and medical-surgical) across all four campus nursing programs.

The intervention group received DML debriefing, and the control group received usual and customary debriefing. The participants were randomly assigned to the intervention (n 78) and control group (n 75).

Little attention was given to defining the concept of clinical reasoning and if it differed with critical thinking. Two instruments were used in this study to assess clinical reasoning and student perception. Clinical reasoning was measured by the Health Sciences Reasoning Test (HSRT). Student perception of the quality of debriefing was measured by Debriefing Assessment for Simulation in Healthcare Student Version (DASH-SV).

The HSRT originally developed to assess critical thinking skills in health science students and professional health practitioners, reports scores for analysis, inference, evaluation, induction, deduction, and overall reasoning skills. All student participants completed the HSRT in the first week. After the ACE.S simulation lab and debriefing, all students completed the DASH-SV. Three weeks later all students completed the HSRT.

The researchers established reliability for the HSRT by using the Kuder-Richardson 20 calculations for dichotomous multidimensional scales. Internal consistency reliability estimates ranged from .77 to .84. Content and construct validity were established by correlating the test items to the Delphi Report in addition to the health sciences faculty committees and human resource professionals. Dreifuerst (2012) reported reliability of the DASH-SV in her original study of 0.82 (n 6, M 29.54, variance 24.26, SD 4.93). Content and criterion validity was established by the developers of DASH-SV (Simon et al., 2009). This instrument rates six key elements of debriefing.

A t-test analysis revealed that nursing students who experienced the DML structured debriefing supported by unfolding case studies scored significantly higher in clinical reasoning than nursing students who had the usual and customary debriefing. Students in the intervention group achieved higher post-test scores on the HSRT than those in the control group (p .44). One interesting finding in the statistical analysis included that when researchers controlled for the pre-test, there was a significant change in scores from the pre-test to post-test that was not recognized in the control group. Although this finding was not large, given a small sample size, even a small change or difference is a significant trend. In addition, student perception of the quality of debriefing using scores from the DASH-SV, indicated a positive difference for students who experienced the DML structured debriefing compared with students who had the usual and customary debriefing. In conclusion, nursing students who had the DML structured debriefing supported by unfolding case studies scored significantly higher in clinical reasoning than nursing students who had the usual and customary debriefing.

Summary

In nursing education, the UCS is increasingly being used as a successful teaching pedagogy (Day, 2011; Reese, 2011; Yousey, 2013) to increase student participation (Himes & Revert, 2012; Johnson et al., 2012; Berndt et al., 2015; Hessler & Henderson, 2013), and knowledge (McCormick et al., 2013); promote clinical reasoning (Berndt et al., 2015; Forneris et al., 2015) and judgment (Johnson et al., 2012; Pobocik, 2014); critical thinking (Arrue & Caballero, 2015; Yousey, 2013; Raurell-Torreda, 2015); build skill performance (Kesten, 2011; Avallone & Weideman, 2015; Majeed, 2014); and enhance learning (Kantar & Massouh, 2015; Berndt et al., 2015; Ghafourifard, Hairian &

Aghajanloo, 2013; Trobec & Starcic, 2015; McCormick, Romero de Slavy & Fuller, 2013). The UCS is complex, time-consuming, and requires additional faculty, thus limiting its use in nursing education (Forbes & Hickey, 2009). Whereas, the NLN-ACE.S scripted UCS is currently used to improve teaching in geriatric content (Arrue & Caballero, 2015; Forneris et al., 2015; McCormick, 2013) and addresses the barriers to design and implementation. Many faculty members think that a case study learning strategy designed to emulate the work environment combined with lecture and simulation will build students' knowledge, skills, and critical thinking; however, the nursing research to support this is lacking. The most significant gaps in the literature were the use of constructive learning theory and handoff communication education and training after implementing an UCS.

CHAPTER III

METHODOLOGY

This chapter describes the methods and procedures that were used to examine the effect of an unfolding case study as a teaching pedagogy on first-semester junior level baccalaureate nursing students. As previously stated, the independent variables were the ACE.S scripted unfolding case study and traditional didactic lecture. The dependent variables were knowledge acquisition, handoff communication skill performance, and critical thinking. Participant characteristics such as age, race, sex, marital status, class status, enrollment and cumulative (cGPA) were also examined. Additionally, this chapter will discuss in detail the research design, hypotheses, sample and inclusion criteria, and setting, protection of human subjects, instrumentation, treatment description, data collection procedure and data analysis plan that were used to complete the study.

Research Design

The Solomon Four-Group research design was employed to conduct this study (See Table 1; Solomon Four-Group and Braver & Braver, 1988). This study included the independent variables, the unfolding case study (UCS) and traditional didactic lecture (TDL). The dependent variables were knowledge acquisition, handoff communication skill performance, and critical thinking. Demographic variables selected were age, race, sex, marital status, class status, enrollment, and cumulative (cGPA).

Table 1

Solomon Four-Group Design

Group	Pre-test HESI HSRT Handoff-CEX	Treatment UCS	Post-test HESI HSRT Handoff-CEX
1 (Experimental group one) RA	O1	X	O2
2 (Control group one) RA	O3		O4
3 (Experimental group two) RA			O5
4 (Control group two) RA		X	O6

Note. Solomon four-group design (Braver & Braver, 1988). RA = Random assignment. TDL= Traditional Didactic Lecture. O=Outcome measure. X = treatment. HESI = Health Educational Systems Incorporated. HSRT = Health Sciences Reasoning Test. Handoff-CEX = Handoff Communication Evaluation Tool. UCS = Unfolding Case Study.

According to McGahee and Tingen (2009), this design is the most rigorous type of experimental design and guards against both internal and external threats to validity. The Solomon Four-Group design contains two extra control groups, which serve to reduce the influence of confounding variables and allow the researcher to test whether the pre-test itself had an effect on the participants' post-test scores. For this reason, Group 3 and Group 4 were included in the experiment without the pre-test. Randomization was accomplished by assigning individual participants to the four groups based on seating arrangements in the classroom. The nurse researcher preceded to assign groups to the two treatment arms of the study and then the control groups. The educational intervention was conducted with the two treatment groups on the same day to avoid extraneous temporal effects. Because unreliability of treatment implementation was a possible threat to validity, standardization of teaching interventions (UCS and TDL) was assured by having all instructors complete a training session emphasizing the maintenance of a consistent

protocol. This technique eliminated potential bias and differences in the delivery of the intervention. Figure 2 displays the study procedure model.

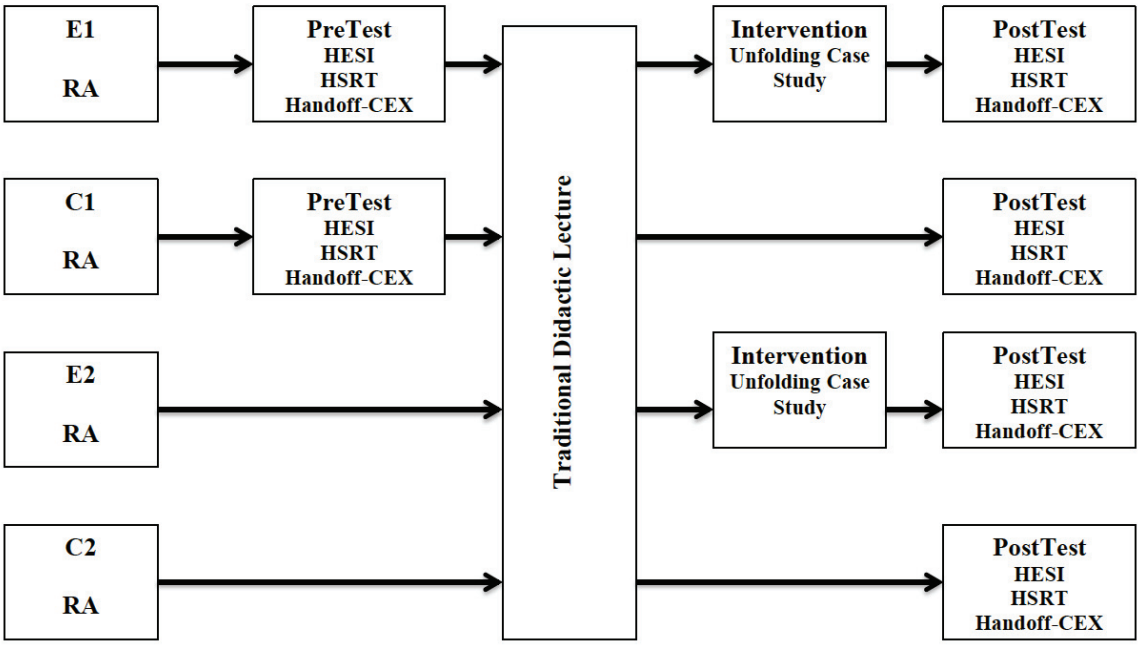

Figure 2. Study procedure model

The Solomon Four-Group design requires the researcher to check that the pre-test did not influence the results. Furthermore, the post-test measure may be affected not only by the intervention or treatment but could also be altered by exposing the participants to the pre-test. One advantage in using the Solomon Four-Group research design is that different types of analysis can be conducted which will depend on the different types of hypotheses and research question examined. The advantage is noted in Figure 3.

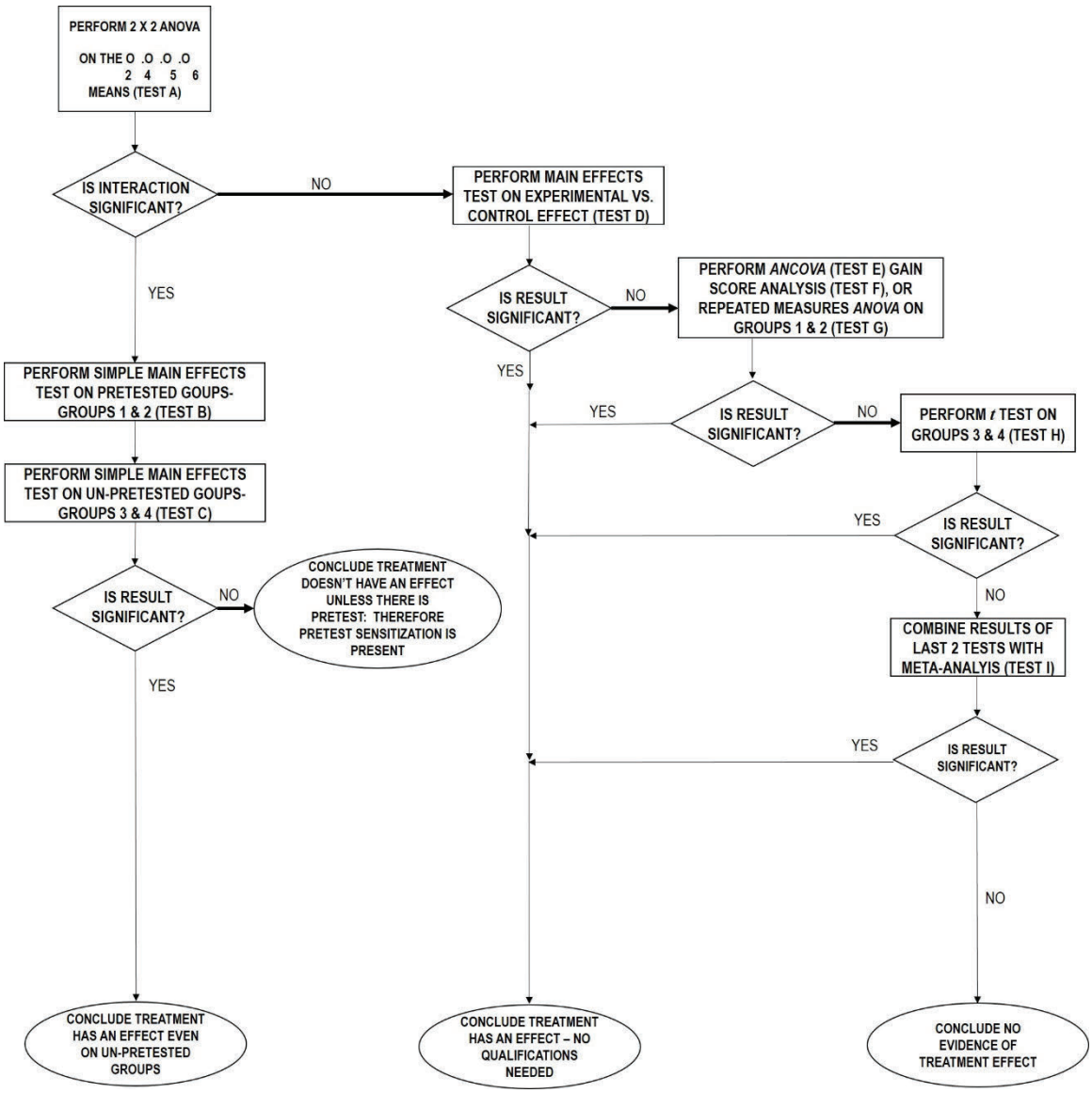

Figure 3. Flowchart of tests and conclusions. (O outcome measure; ANOVA analysis of variance; ANCOVA analysis of covariance.) Recreated from Braver & Braver (1988).

The initial step in this analysis was to conduct a 2x2 Analysis of Variance (ANOVA) to determine if pre-sensitivity existed in the pre-test groups and then all the post-test groups. The treatment level was one factor, and the absence or presence of the pre-test was the second factor. Secondly, ANOVA was performed on the experimental

versus the control groups to determine the effectiveness of the educational intervention. The next step was to perform an ANOVA to test the significance of differences between the group means after adjusting scores on the dependent variables to remove the effect of covariates. A t-test was then used to determine if the difference in the means was statistically significant. A Pearson product-moment correlation coefficient (r) was used to determine relationships between demographic variables, knowledge acquisition, handoff communication skill performance and critical thinking.

Research Hypotheses

The following research hypotheses were tested:

H_{01} - There will be no statistically significant difference in pre-test and post-test knowledge acquisition scores, as measured by the HESI Custom Exam, in first-semester junior baccalaureate nursing students who receive the traditional didactic lecture and those who receive the ACE.S- UCS scenario intervention.

H_{02} - There will be no statistically significant difference in pre-test and post-test handoff communication skill performance scores, as measured by the Handoff-CEX tool, in first-semester junior baccalaureate nursing students who receive the traditional didactic lecture and those who receive the ACE.S- UCS scenario intervention.

H_{03}- There will be no statistically significant difference in pre-test and post-test critical thinking scores, as measured by the Health Sciences Reasoning Test (HSRT), in first-semester junior baccalaureate nursing students who receive the traditional didactic lecture and those who receive the ACE.S-UCS handoff scenario intervention.

H_{04} - There will be no statistically significant relationship between the selected demographic variables (age, race, sex, marital status, class status, enrollment and cumulative GPA) and knowledge acquisition as measured by HESI post-test scores, handoff communication skill performance, as measured by Handoff-CEX post-test scores, and critical thinking as measured by Health Sciences in Reasoning Test post-test scores.

H_5 - There will be a statistically significant relationship between knowledge acquisition, handoff communication skill performance, and critical thinking in first-semester junior baccalaureate nursing students.

Sample and Inclusion Criteria

A sample of 71 baccalaureate nursing students attending a Historically Black College and University (HBCU) who were in their junior level of a four-year undergraduate nursing program and enrolled in *NURS 304 - Health Deviations I* course, was recruited for this study. The convenience sampling plan was chosen due to the accessibility to individuals available as study participants, and representativeness of the sample. This sample was selected because the criterion increases the likelihood that junior level nursing students possess the basic, fundamental knowledge (aging, adult health I, medical-surgical I), skills and have a basic application of critical thinking. According to Gillis and Jackson (2001), samplings detect or identify real differences among variables and determine the probability that an inferential statistical test detects a significant difference that is real or correctly rejects a null hypothesis.

The sample size for this study was determined by using G*Power v.3.1.2, A-priori power analysis program (Faul, Erdfelder, Buchner, & Lang, 2009). The determined

sample size of N 90 assumed a medium effect size of 0.3, a type I error rate of alpha 0.05 and a required power of 0.80. An overall sample size of 90 first semester junior baccalaureate nurse students was required for this study (Creswell, 2015; Polit & Beck, 2016). However, at the time of this study, only 71 students were enrolled in Health Deviations I. Of the 71 students enrolled, 100% participated in the study. Sample characteristics revealed an age range of 20-48 years, and data analysis via descriptive statistics yielded a sample mean age of all four groups combined of 24.24 (SD 6.02) years. Among the first-semester junior level nursing students, 78.9% (n 56) were African American/Black, 7% (n 5) were Caucasian/White and 7% (n 5) were Asian. With respect to sex/gender, 64% (n 64) were female, and 9.9% (n 7) were male. Approximately, 83.1% (n 59) participants reported being single (never married), while 14.1% (n 10) reported married and 2.8% (n 2) were divorced.

Setting

The settings included the classroom and clinical labs of a baccalaureate school of nursing program within a historically black college and university (HBCU) in southeastern Louisiana. The study site was chosen because of the researcher's access to the study population. Since the research was carried out in the institution in which the primary researcher was employed, additional safeguards were followed. These safeguards related to the ethical issues involving "backyard research" which is defined as carrying out a study in one's place of employment, home, or familiar setting (Cresswell, 2003; Glesne, 1999). Though the use of one's own environment may provide easy access, there are many implications, including political and ethical issues, involved in conducting "backyard research" (Creswell, 2003; Glesne, 1999). Glesne (1999) cites issues in

negotiating with colleagues and managers on what data can be collected as well as reported. Another problem of concern relates to the uncovering of "dangerous or forbidden knowledge" which can be politically risky (Glesne, 1999). To manage the implications involved in carrying out "backyard research," the researcher obtained permission to conduct the study from the Dean's office of the nursing program (See Appendix A) and through the authority of the College's Institutional Review Board (see Appendix B). The researcher also engaged in the writing of reflective journal notes as a strategy to address personal biases. To achieve consistency, clarity, and accuracy in the findings generated from the study, the researcher met regularly with the major professor, methodologist, and peer debriefer, for the purpose of reviewing and achieving consistency and accuracy in the interpretation of the transcripts, codes, and themes generated from the study (Cresswell, 2003; Merriam, 1998).

Protection of Human Subjects

Prior to data collection, approval was obtained from Southern University and A&M College's Institutional Review Board (see Appendix B for a copy of the approved IRB). Permission was obtained from the Dean of the nursing program to collect data (see Appendix A for letter requesting permission). Participants were given the purpose and general overview of the study with an opportunity to ask questions. Once all questions were answered, and participants agreed to participate, participants were given a packet with a five-digit code. Inside the packet included a written letter to participate (see Appendix C for participation letter), informed consent (see Appendix D for informed consent document), and demographic questionnaire (see Appendix E for questionnaire). Completed questionnaires were placed in a sealed envelope with the assigned five-digit

number. Study participants were assured that all information received was secure and remained anonymous and confidential. Participants were informed that their participation in the study was voluntary and that they could withdraw or refuse to participate at any time during the study without penalty. Participants were informed of the potential risks associated with participating in the study which included: (a) a feeling of personal apprehension concerning the content in the questionnaires; (b) a feeling by the participants that their personal responses were shared with others; and (c) possible fatigue as it related to the time needed to complete questionnaires. There were no anticipated risks to students participating in this study. Participants have attended in-house clinical experience, during which time they cared for patients in a simulated setting. They have also participated in skills training using manikins and interaction with classmates similar to what will be used in the UCS. Because of these experiences, it was anticipated that participants would be comfortable in the UCS environment. The nurse researcher was in attendance, monitored, and provided assistance to ensure confidentiality and anonymity of the participants at all times. The nurse researcher was the only person with access to the data.

A codebook was developed for data entry into the computer. According to Grove, Burns, and Gray (2012), a codebook provides a safety net and keeps the researcher in control for accessing data later. The codebook was used to identify and define each question and variable in the study, with an abbreviated variable name, an acceptable code, and range of possible numerical values. Test scores were matched with results from research instruments. The codebook was linked with data collection forms. A coding scheme included a set of numerical codes which represented all response categories, with

additional codes to enter missing data. Passwords were established to access the computer and hard drives. All research data was kept in a secure location away from the University.

Instrumentation

To measure knowledge acquisition, handoff communication skill performance and critical thinking; the following three instruments and a demographic questionnaire were used to collect data: a) HESI custom exam, b) Handoff CEX instrument (see Appendix F for the instrument), and c) HRST. Written permission was obtained from the authors of each before using the instruments (see Appendix G for email providing permission). A demographic questionnaire was designed by the researcher (see Appendix E for the researcher-designed questionnaire). Completion of the instruments took approximately 60 - 120 minutes.

Health education system incorporated (HESI) exam. A Health Education System Incorporated (HESI) exam was used to assess knowledge acquisition. Once the study received approval from the committee, the HESI nurse researcher specialist created a pre- and post-test, free of charge, with the primary investigator based upon content related to the scenario. Test items were selected from the HESI database and included 25 content related questions (respiratory, cardiovascular, communication, auditory and visual impairment, gerontology). A test blueprint for the exam was developed by an HESI nurse educator whose clinical practice was similar to the exam being developed and included the syllabus provided by the primary investigator. A sample of this exam is not included in the appendices as a measure of protection and test security. The students took this computer based exam in a computer lab at the school of nursing. The results

were analyzed by HESI corporation immediately and forwarded to the researcher in a secured format.

This HESI custom exam is a standardized exam that contained critical thinking test items and evaluated students' knowledge and ability to apply specific content and concepts to clinical problems. HESI custom exam was developed using the conceptual frameworks grounded in critical thinking theory and classical test theory. Based on this foundation, the validity and reliability have been established with the HESI exams (Morrison et al., 2008).

The HESI exams generated two scores, an HESI score, and a conversion score. The first, HESI score was based on the HESI Predictability Model, a proprietary model, that calculated the score based on the idea that test items are individually weighted based on the difficulty level. The HESI scores range from 0 to 1,500 depending on the difficulty level. However, a score of 850 indicates an acceptable performance level. HESI recommends a performance level of 900 and above. The difficulty level was determined by dividing the number of correct responses to the item by the total number of responses to that item. This calculation derived a percentage of correct responses to the item. The HESI score reflects the application of the HESI Predictability Model (HPM), which has been found to better predict NCLEX success over the conversion score. The second, a conversion score, was based on a percentage that reflected the average weight of all test items on the customized exam and the average weight of the test items answered correctly (Morrison et al., 2008). To determine reliability, HESI conducts an item analysis on each exam. The overall reliability of HESI Specialty Exams will be determined by calculating the Kuder-Richardson Formula 20 (KR20) for each exam.

KR20 will be estimated and calculated prior to the administration of the test. The estimated reliability or KR20 for the HESI Specialty Exam will range from 0.84 to 0.92. The degree of validity is an ongoing process that will be determined through the use of content validity, construct validity, and criterion-related validity (Morrison et al., 2008). Content validity was determined by reviewing the syllabus of the *NURS 304 Health Deviations - I* course by Elsevier's nurse educator, researchers and a discussion with the course faculty.

Handoff clinical examination (CEX). The Handoff Clinical Examination (CEX) tool was used to assess handoff communication skill performance. This tool has been used to measure the quality of the handoff provider and the handoff receiver in medical and nursing handoffs (Horwitz et al., 2013; Aurora et al., 2014; Avallone & Weideman, 2015). The Handoff-CEX is composed of two sections (provider, receiver) each with relevant domains (setting, organization, communication, content, clinical judgment, professionalism) on a nine-point Likert scale (see Appendix F for the Handoff-CEX instrument). The handoff recipient section does not include a domain for content. Overall competency was also measured. Each domain was scored on a 9-point scale and included descriptive anchors at low and high ends of the performance.

The scale was divided into unsatisfactory (score 1-3), satisfactory (4-6) and superior (7-9). Responses allow the evaluator to measure each domain on a scale from 1-9, ranging from lowest to highest performance. The Handoff CEX reliability revealed internal consistency was stable and satisfactory with Cronbach's alpha of 0.95 in testing with medical school faculty (Aurora, 2014) and pre-licensure baccalaureate nursing

students (Avallone & Weideman, 2015). The developer granted permission to use the tool (see Appendix G for email providing permission).

Critical Thinking. The Health Sciences Reasoning Test (HSRT) was used to assess critical thinking. The HSRT adapted from the California Critical Thinking Skills Test (CCTST) was developed specifically for groups of students and professionals in health science educational programs and fields. The main purpose of the HSRT is to measure the skills dimension of critical thinking in high-stakes reasoning and decision-making processes. Poorly reasoned decisions can have devastating effects on the lives of patients and their family members. The HSRT was a 33-item, multiple-choice questionnaire which assessed five subdomains of critical thinking administered over 50 minutes. The five domains included analysis, inference, evaluation, induction and deduction. Each question had one correct answer and three distractors. The test items ranged in complexity and difficulty and are set in professional clinical practice contexts. The test did not require knowledge of health sciences.

The HSRT scale provided an overall score of critical thinking ability, a set of subscale scores and a percentile ranking. The scores will help to understand which critical thinking skills the test-taker is strong and weak in, and which will require training attention. An overall score of 21 to 25 indicated strong critical thinking ability. A score of 15 to 20 indicated moderate critical thinking ability. A score $\geq$ 26 was considered superior. If the overall score was less than 14, the test-taker was encouraged to seek out an academic counselor to review and discuss strategies to help with critical thinking. Subscale scores above 5 indicated strong for analysis, inference, and evaluation. Subscale scores above 8 indicated strong for induction and deduction. Reliability data for the

overall test score and the five subscale scores was demonstrated with a Cronbach's alpha of .81 (total score) and a range of .52 to .77 (subscales) (Facione, 2006; Facione et al., 2010). Insight Assessment granted permission to use the instrument (see Appendix G for email providing permission).

Demographic questionnaire. The investigator developed the demographic questionnaire (see Appendix E for the researcher created instrument). The questionnaire was based on a review of current literature and the Louisiana Board of Regents Statewide Student Profile System Specifications (2015) report. This report includes demographic information most commonly collected in education data. The questionnaire included age, race, sex, marital status, class status, enrollment and cumulative (cGPA). The demographic questionnaire provided insight into the composition of first-semester junior baccalaureate nursing students who participated in this study. Face validity was established with five experts in higher education each averaging 20 years of teaching experience. Four of the five experts averaged 20 years of teaching experience in nursing education.

Treatment Description

The independent variable, learning method, included an experimental condition (unfolding case study) and a comparison condition (traditional didactic lecture). The experimental condition (see Appendix H for the simulation design template) consisted of a pre-simulation/clinical activity for student participants (PPT on the care of COPD and Pneumonia patient, online best practices in handoff communication/a successful handoff video), a two-hour training session for assigned clinical faculty (see Appendix I for faculty training notes), and a 3 hour handoff communication workshop for nursing

students (see Appendix H for student training template). The course coordinator met with the primary investigator on four separate occasions to discuss a detailed plan of the research study, orientation to pre-simulation activities, Handoff-CEX instrument, HESI custom exam, HSRT exam and conduct a mock simulation. The course coordinator conducted two training sessions for faculty (see Appendix I for training notes). Four full-time faculty members and one clinical adjunct faculty member were trained during the two training sessions. All faculty members had been a registered nurse on average at least 15-20 years. All faculty members had at least an MSN as the highest level of education with an average of five years teaching. All faculty members had an average of five to ten years' experience in nursing education. The four full-time faculty members had been teaching in their respective courses at least a minimum of four semesters. The part-time clinical adjunct faculty had been a clinical instructor for at least, 5 to 10 years. No faculty members had experience in research. The primary researcher also met with each faculty member to administer a packet with all documents and answer any questions. The primary investigator was present the morning of the research in an area away from the research site as a resource for questions and concerns.

The handoff workshop for students incorporated the interaction of the NLN - ACE.S scripted unfolding case (see Appendix H for template), the ISBAR (see Appendix J for the ISBAR instrument) checklist/protocol for organizing data, best practices relating to effective handoff communication, handoff simulation practice in a clinical scenario, and debriefing. During the unfolding case study, students had access to lab values, physician orders, medication list, supplies and ISBAR for organizing data. The ACE.S scripted UCS included a geriatric patient diagnosed COPD, Cardiovascular Disease

(CVD), Asthma, and hearing loss, being transferred from the hospital rehabilitation facility to an assisted living facility. If students responded to the scenario appropriately, the case continued to unfold with additional patient data. Inappropriate responses resulted in increased prompting and facilitating by the instructor. Following a prescribed time, the UCS discussion ended, and the participants and instructor discussed the issues (see Appendix H for template). After discussion of issues, students were divided into groups of three. Each student had an opportunity to practice as the handoff provider, handoff receiver, and observer using the ISBAR checklist/protocol. Key information was intentionally missing on the ISBAR checklist. Following the simulation, faculty led a debriefing session. The student participating as the observer had an opportunity to provide feedback during debriefing. The clinical faculty completed the Handoff CEX post-test during the UCS simulation. The HESI and HSRT post-test was administered during a 120 - minute period following the unfolding case simulation. Assigned clinical faculty was trained in best practices in handoff communication, use of the ISBAR checklist/protocol, Handoff-CEX evaluation and debriefing strategies.

The traditional didactic lecture (comparison) consisted of a one- hour lecture on Respiratory Adult Health Deviations, Communication, and Documentation content. The traditional didactic content was taught by a faculty member assigned to the course with five years of teaching experience in nursing education. Instruction was delivered to the students participating via lecture PPT slides and included in the didactic lecture content on the ISBAR steps for communication dialogue between nurses. An ISBAR skilled communication handout was provided to the nursing students to organize this activity. This handout labeled ISBAR Skilled Communication included steps of Introduction,

Situation, Background, Assessment, and Recommendation and provided a fill-in-blank section next to each subtopic. The participating students read a written case and answered questions. The questions reflected the same issues as those discussed in the UCS simulation session. The HESI, HSRT, and Handoff CEX was administered during a 60 - 120-minute session following the traditional didactic lecture. At the end of data collection, the participating students were given a packet with the pre-simulation/clinical activity, PPT on the care of Chronic Obstructive Pulmonary Disease (COPD) and Pneumonia patient, and online best practices in handoff communication/a successful handoff video. A three hour handoff communication workshop was also provided to the comparison group.

Data Collection Procedure

1. Approval was obtained from Dean of the Nursing Program (see Appendix A for letter requesting permission) and Southern University and A&M College - Institutional Review Board (see Appendix B for approved IRB). Written permission was secured to use the Handoff-CEX, HESI custom exam and the HSRT (see Appendix G for permissions).
2. The primary investigator met with the course coordinator for NURS 304- *Health Deviations I* course at the beginning of the semester to explain the purpose and protocol of the research study and secured dates to train faculty, recruit students, and collect data.
3. An agreed upon date for faculty training, the primary investigator reviewed with the course coordinator and clinical faculty plan for a research study, orientation

to study instruments (see Appendix I), the NLN ACE.S scripted unfolding case study teaching experience and performed a practice run.

4. On the third day of class, the primary investigator attended the *N304 - Health Deviations I* class to explain the purpose and protocol and recruit volunteer participants. All students enrolled in *NURS 304 Health Deviations I,* were eligible to participate. Students were informed that participation was voluntary and there was no compensation for participation. Students were informed that the ACE.S scripted UCS simulation experience would take place on a clinical day. Students were advised of protocol and procedures for confidentiality and anonymity and that the researcher would not share information related to the study.
5. Students that chose to participate in the study were given a packet with a five-digit code. The packet contained a cover letter (see Appendix C for cover letter), consent form (see Appendix D for consent), the demographic questionnaire **(**see Appendix E for researcher-designed questionnaire**)** and two pens. Students were provided verbal and written information and instructions regarding how to complete the consent form and demographic questionnaire. The demographic questionnaire took approximately 5 minutes to complete. Once a participant was found to be eligible for participation, informed consent was obtained, and written instructions were given when to report to the clinical simulation laboratory.
6. This research study was conducted in the school of nursing classroom and simulation laboratory over a two-week period on assigned lecture and clinical day. On Week 1 Lecture day 1, participants were randomly assigned to four

groups (two experimental and two control). Group 1 (pre-test experimental), Group 2 (pre-test control), Group 3 (no pre-test experimental) and Group 4 (no pre-test control).

7. Interventions, either a 1-hour lecture or 3-hour UCS was conducted during the second week of class. These sessions met at the same time in different classrooms. Because unreliability of treatment implementation was a possible threat to validity, standardization of teaching interventions (UCS and traditional didactic lecture) were assured by having all instructors complete a training session emphasizing maintaining a consistent protocol.
8. In week one, clinical day one, Group 1 and Group 2 were given the pre-test HESI and pre-test HSRT to complete before conducting an evaluation with the pre-test Handoff CEX tool. Group 1 and Group 3 were given pre-simulation activities to complete before week two clinical day. These activities included: an online PowerPoint on Chronic Obstructive Pulmonary Disease (COPD) and pneumonia diagnoses and video in Skilled Handoff Communication, 3-page article about Best Practices in Handoff communication independent reading assignment, and ISBAR (Introduction, Situation, Background, Assessment, Recommendation) checklist/protocol organizing data form with overview (see Appendix H for template).
9. Week 2 lecture day, the traditional didactic lecture on Respiratory Health Deviations and Communication/Documentation was delivered to all study participants in the classroom.

10. On Week 2 clinical day one, all groups met in the simulation laboratory. The ACE.S scripted UCS treatment was administered with assigned faculty to groups 1 and 3. Group 1 and Group 3 were placed into subgroups of 3 students. Each student had the opportunity to participate as handoff provider, handoff receiver, and observer. Faculty completed the Handoff CEX evaluation tool for each student and then administered the post-test HESI, and HSRT to groups 1 and 3. Students were able to review the questions, responses, and rationales, and receive their grade. The ACE.S scripted UCS simulation intervention took approximately two hours. After participants had completed the simulation, they participated in a debriefing session with clinical faculty.
11. On the same simulation day, (groups needed to be conducted concurrently to minimize threats to internal validity), Groups 2 and 4 reported to the clinical laboratory at their designated time. The assignment focused on COPD and pneumonia content. The participating students were asked to read over a written overview of the etiology, diagnosis, and management of respiratory deviation. Students were placed into groups of 3 with assigned faculty. Each student had the opportunity to participate as handoff provider, handoff receiver, and observer. Participants in each condition were asked to keep the topic and nature of the session confidential through the end of the research study. Faculty completed the Handoff CEX for each student and then administered the post-test HESI and HSRT to groups 2 and 4. Students reviewed the questions, responses, and rationales, and received their grade.

12. Group 2 and Group 4 students had an opportunity to review pre-clinical activities and participated in ACE.S scripted unfolding case study after all data had been collected.

Data Analysis Plan

Data was analyzed using the most recent version of the Statistical Package for Social Sciences (SPSS) for Windows software version 22.0. The data was entered by the investigator, reviewed by both the primary investigator and an expert in statistics to ensure the accuracy of the data. Descriptive statistics (frequency distributions, means, modes, medians, standard deviations, and percentages) were used to describe the sample population demographic characteristics. The Meta-analysis methods of Braver and Braver (1988) required the use of ANOVA, ANCOVA, main effects test, and t-tests. Analysis of Variance (ANOVA) to determine the effect of an educational intervention on knowledge acquisition, handoff communication skill performance and critical thinking. Analysis of covariance (ANCOVA) was utilized to test mean differences among groups on the dependent variables while controlling for one or more covariates. A *t*-test was used to determine if the difference in the means was statistically significant. These methods were used to test hypotheses one, two, and three. For each hypothesis statement and analysis method, a table of *p*-values indicating significance was used to assist in the meta-analysis method. The Pearson's correlation coefficient and Kendall's Tau was used in determining correlations between selected demographic variables, knowledge acquisition, handoff communication skill performance and critical thinking to test null hypothesis four and five. Table 2 displays data analysis and statistical tests to answer the overall research question and hypotheses.

Table 2

Data Analysis and Statistical Tests

Research Hypothesis	Variable	Statistical Tests
H_1 -There will be no statistically significant difference in pre-test and post-test knowledge acquisition scores, as measured by the HESI Custom Exam, in first-semester junior baccalaureate nursing students who receive the traditional didactic lecture and those who receive the ACE.S- UCS scenario intervention.	Knowledge acquisition	ANOVA ANCOVA *t*-test
H_{02} - There will be no statistically significant difference in pre-test and post-test handoff communication skill performance scores, as measured by the Handoff-CEX tool, in first-semester junior baccalaureate nursing students who receive the traditional didactic lecture and those who receive the ACE.S- UCS scenario intervention.	Handoff communication skill performance	ANOVA ANCOVA *t*-test
H_{03}- There will be no statistically significant difference in pre-test and post-test critical thinking scores, as measured by the Health Sciences Reasoning Test (HSRT), in first-semester junior baccalaureate nursing students who receive the traditional didactic lecture and those who receive the ACE.S-UCS handoff scenario intervention.	Critical thinking	ANOVA ANCOVA *t*-test
H_{04} - There will be no statistically significant relationship between the selected demographic variables (age, race, sex, gender, marital status, and cumulative GPA) and knowledge acquisition as measured by HESI post-test scores, handoff communication skill performance, as measured by Handoff-CEX, and critical thinking as measured by Health Sciences in Reasoning Test post-test scores.	Demographic characteristics Knowledge acquisition Handoff communication skill performance Critical thinking	Descriptive statistics Pearson's correlation coefficient Kendall's Tau
H_{05} - There will be a statistically significant relationship between knowledge acquisition, handoff communication skill performance, and critical thinking in first-semester junior baccalaureate nursing students.	Knowledge acquisition Handoff communication skill performance Critical thinking	Bivariate correlation matrix Pearson's correlation coefficient

Summary

The significance of using the UCS in preparing nursing students competent in promoting safety shows great promise and a positive influence on learning outcomes. Limited research exists that examines the impact of the UCS on knowledge, skills and critical thinking. Therefore, the purpose of this study was to examine the effect of an ACE.S scripted unfolding case study on knowledge acquisition, handoff communication skill performance and critical thinking in first-semester junior baccalaureate nursing students. Also, learning outcomes were measured by the HESI Custom exam, Handoff CEX tool, and Health Sciences Reasoning Test (HSRT). The Solomon four-group design method was employed to measure the effectiveness of an educational intervention on learning outcomes. This method allowed the investigator to compare the unfolding case study with traditional teaching methods in promoting knowledge acquisition, handoff communication skill performance and critical thinking.

CHAPTER IV

RESULTS AND FINDINGS

This chapter presents a discussion of the results from data analysis, which examined the effect of an unfolding case study teaching pedagogy. Specifically, the purpose was to test the effectiveness of the ACE.S unfolding case on first-semester junior baccalaureate nursing students attending an HBCU. As previously stated the independent variables were traditional didactic lecture and ACE.S unfolding case study and dependent variables were knowledge acquisition, handoff communication skill performance, and critical thinking. Participant characteristics, including age, race, sex, marital status, class status, enrollment, and cumulative GPA, were examined. The study also sought to determine a relationship between demographic variables and knowledge acquisition, handoff communication skill performance and critical thinking.

Additionally, this chapter will discuss in detail descriptive statistics used to describe and summarize each variable. This discussion will also include the use of inferential statistics that led to the development of an effective educational intervention in handoff communication using independent and dependent variables. Five hypotheses were tested, and a display of results was presented separately. This chapter will conclude with a discussion of limitations imposed by the data and implications for future research.

Design of the Study

To meet the goals of this research study, the analysis followed a Solomon Four-Group design. This design allowed the researcher to examine both the main effects of testing and the interaction of testing and treatment. In using the Solomon four-group design, participants were randomly assigned to one of four different groups based on classroom seating displayed in Table 3. Utilizing McGahee and Tingen's (2009) guidelines, two of the groups received the treatment (intervention), and two did not (control). Only one of the treatment groups was administered the pre-test; however, all four groups were post-tested. Additionally, the Solomon Four-Group design contains two extra control groups, which serve to reduce the influence of confounding variables. For this reason, Group 3 and Group 4 were included in the experiment without the pre-test as exhibited in Table 3.

Table 3

The Intervention Plan

Group		Pre-test	Intervention UCS	Post-test
1	E1 (n 18)	X	X	X
2	E2 (n 18)		X	X
3	C1 (n 18)	X		X
4	C2 (n 17)			X

The Solomon Four-Group research design is the only type of experimental design that allowed the researcher to assess the presence of pre-test sensitization. According to Braver and Braver (1988), the post-test measure may be affected not only by the intervention or treatment but could also be altered by exposing the participants to the pre-

test. In other words, a student could score better on the post-test measure because of exposure to the pre-test. Pre-test sensitization often occurs in educational settings (Braver & Braver, 1988). The effects of sensitization are dependent on the length of time elapsed between pre-test measures and the post-test. This interaction may limit the generalizability of findings of the research. This design allowed the researcher to test for pre-test sensitization and separate out the effects of pre-testing and the treatment (McGahee & Tingen, 2009).

The treatment was introduced to all four groups simultaneously on the same day to avoid extraneous temporal effects. By providing simultaneous treatment to all four groups, the potential for bias and differences in delivering the intervention was prevented. The advantage of using a Solomon Four-Group design allowed for comparisons across the four test settings: a) students were given a pre-test, intervention, and post-test; b) students were given a pre-test and post-test; c) students were given the intervention and a post-test; and d) students were given a post-test only. This design also allowed for comparison of the current teaching methods (traditional didactic lecture versus unfolding case study) with outcomes of the two intervention groups (McGahee & Tingen, 2009).

Demographic Characteristics

The demographic characteristics of the sample are presented in Table 4. Of the 71 first-semester, junior baccalaureate nursing students, 100% (N 71) participated in the study. The vast majority of the sample was African American 78.9%, n 56) and female (64%, n 64), and single (83.1%, n 59) never married. Participating students ages ranged from 20 to 48 years of age, with a mean age of 24.24 (SD 6.02) years. As shown in Table 3, the students were randomly assigned to either the experimental group- those

receiving the UCS (n 36) and the control group, those receiving the traditional didactic lecture only; (n 35). The overall self-reported cumulative GPA of the study sample was 3.04 (SD 0.29). The demographic questionnaire elicited additional data regarding their class status and enrollment status. The overwhelming majority of students (73.2%, n 52) indicated that they were junior level students. Over half (81.4%, n 57) of the students in the experimental group reported that this was their first enrollment in the course, *Health Deviations I*. The experimental and the control group demographics are detailed further in Table 4 and 5.

Table 4

Demographic Characteristics of Sample (N 71)

Characteristics	Experimental Group n 35 (%)	Control Group n 35 (%)
Race/ethnicity		
Asian	1 (2.9)	4 (11.1)
Native American or Alaskan Native	1 (2.9)	0 (0)
Black, Non-Hispanic	28 (80.)	28 (77.8)
White, Non-Hispanic	2 (5.7)	3 (8.3)
Foreign/Non-Resident Alien	1 (2.9)	0 (0)
Two or more races	2 (5.7)	0 (0)
Sex/Gender of Student		
Female	32 (91.4)	32 (88.9)
Male	3 (8.6)	4 (11.1)
Marital Status		
Single (never married)	29 (82.90	30 (83.3)
Married	5 (14.3)	5 (13.90
Divorced	1 (2.9)	1 (2.8)
Class Status		
Junior	26 (74.3)	26 (72.2)
Senior	9 (25.7)	10 (27.8)
First enrollment in NURS 304		
Yes	27 (77.1)	30 (83.3)
No	7 (20.0)	6 (16.7)

Table 5

Mean and SD of Age and cGPA For Experimental and Control Groups (N 71)

Characteristics	Experimental Group n 35 (%)	Control Group n 35 (%)
Age		
Minimum	20	20
Maximum	44	48
Mean	23.7	24.8
SD	5.5	6.5
cGPA		
Minimum	2.70	2.00
Maximum	3.70	3.70
Mean	3.07	3.01
SD	0.25	0.3

Instruments

Three research instruments were used to collect study data: 1) The Health Education Systems Incorporated Custom Exam (HESI); 2) the Health Sciences Reasoning Test (HSRT); and 3) the Handoff-CEX. Written permission was obtained from the authors prior to using the instruments (see Appendix G). The estimated completion time for all questionnaires was approximately 15 60 minutes.

Demographic Questionnaire

A demographic questionnaire was administered which consisted of six questions developed by the researcher (see Appendix F). The questions identified background information and characteristics. The characteristics included age, race, gender, marital status, class status, enrollment, and cumulative GPA. The characteristic of class status identified the class level of the student as a junior or senior in the nursing program. The characteristic of enrollment status identified the student as the first or second enrollment in course *NURS 304 Health Deviations I*.

Results of HESI Custom Exam

Overall mean performance scores on HESI Custom pre-test exam ranged from 449 1048 (M 712.18, SD 134.94) and post-test ranged from 193 to 981 (M 619.79, SD 173.55). This overall score calculated an individual weight based on the difficulty level. See Table 6 for Comparison of pre-test and post-test overall performance HESI scores by educational intervention for both groups.

Table 6

Comparison of Pre-test and Post-test Overall Mean Performance HESI Scores by Educational Intervention

Test Group	Pre-test HESI scores		Post-test HESI scores	
	Mean	SD	Mean	SD
TDL (control)	721.06	(136.44)	647.39	(154.13)
UCS (treatment)	703.29	(137.01)	590.56	(189.92)

Control group scored higher on post-test scores (M 647.39, SD 154.13) when compared to the treatment group (M 590.56, SD 189.92). The overall conversion score ranged from 45.31 82.06 (M 64.04, SD 9.61) for HESI pre-test and post-test ranged from 21.16 82.55 (M 59.18, SD 12.24).

The conversion score reflects the average weight of all test items on the customized exam, and the average weight of items answered correctly. The highest score that can be achieved on the HESI is 1500. HESI's recommended performance score for a predictor of NCLEX success is > 950. Scores ranging from 850 899 are interpreted by HESI as acceptable. The Kuder-Richardson Formula 20 for the HESI exam was 0.36 for pre-test and 0.43 for post-test, indicating the HESI custom exam measure had a low

degree of internal consistency reliability in the sample. According to Waltz, Strickland, and Lenz (2010), the length of an exam, the difficulty of test items, and the spread in scores may be factors that affect the low alpha value.

Results of Handoff Clinical Examination (CEX)

Overall scores for Handoff Communication ranged from 4.0 (M 3.77; SD 1.11) for pre-test groups and 5.0 (M 3.91, SD 1.17) for post-test groups. In the pre-test groups, 57.14% (n 20) scored a 3.0 of the total (35), indicating an unsatisfactory level of quality in handoff communication. Domain scores less than 4.0 indicated unsatisfactory handoff skill performance. After the treatment, 52.11% (n 37) scored at least a 4.0 or greater achieving a level of satisfactory to superior rating in handoff quality as the provider and receiver. Higher group mean provider Handoff-CEX post-test scores were observed in treatment groups for all domains; setting, organization, communication, content, judgment and professionalism. The three highest post-test scores in the handoff provider section for the treatment group were setting (M 5.51, SD 1.46), communication (M 4.62, SD 1.51), and professionalism (M 5.14, SD 1.26) indicating satisfactory skill performance are shown in Table 7.

Table 7

Group Mean Provider Handoff-CEX Provider Domain Post-test Scores

		HOP setting	HOP organization	HOP communication	HOP content	HOP clinical judgment	HOP professionalism
Intervention	Mean	5.51	4.40	4.62	4.42	4.28	5.14
	N	35	35	35	35	35	35
	SD	1.46	1.63	1.51	1.33	1.63	1.26
Control	Mean	4.61	3.52	3.50	3.47	3.38	4.76
	N	34	34	34	34	34	34
	SD	1.32	0.74	0.83	0.96	0.88	1.67

Receiver Handoff-CEX post-test scores were also observed in treatment groups for all domains; setting, organization, communication, judgment and professionalism as provided in Table 8.

Table 8

Group Mean Receiver Handoff-CEX Domain Post-test Scores

		HOR setting	HOR organization	HOR communication	HOR clinical judgment	HOR professionalism
Intervention	Mean	5.26	4.38	4.40	4.17	5.14
	N	35	35	35	35	35
	SD	1.46	1.37	1.28	1.40	1.29
Control	Mean	4.53	3.47	3.50	3.38	4.50
	N	34	34	34	34	34
	SD	1.23	0.83	0.86	0.70	1.35

The three highest post-test scores in the receiver section were setting (M 5.26, SD 1.46), organization (M 4.37, SD 1.37), and professionalism (M 5.14, SD 1.40) indicating satisfactory skill performance. The Handoff-CEX tool reliability was measured with Cronbach's alpha and was found to be satisfactory at 0.86, indicating a high level of internal consistency.

Results of Health Sciences Reasoning Test (HSRT)

The percentile score in this research study was 42% with students in this research study compared to external professional students in the Health Sciences. In comparison, the average percentile score decreased in both the treatment groups pre-test (M 53.71, SD 30.30) post-test (M 38.38, SD 29.21) and control groups pre-test (M 42.65, SD 25.06) and post-test (M 38.66, SD 28.44).

Data analysis indicated an overall critical thinking score of 18.0 (M 18.85, SD 4.05) for pre-test (n 35) and 15.0 (M 17.07, SD 4.29) for post-test for the HSRT. These scores indicated moderate critical thinking ability in using reasoning for reflective judgment in the participants. As previously stated an overall score of 21 to 25 indicated strong critical thinking ability. A score $\geq$ 26 is considered superior. In order for an individual to receive a strong or superior score, the student would have to demonstrate high scores in all subscale cognitive areas associated with critical thinking.

For total scores of 0-14, there is possible insufficient test-taker effort, possible reading or language comprehension issues, or cognitive fatigue. Subscale scores above 5.0 indicate strong for analysis, inference, and evaluation. Subscale scores above 8 indicate strong for induction and deduction. Subscale scores below the recommended levels indicate areas that need improvement. For subscale scores, analysis, inference, and evaluation; pre-test scores of 5.0 (M 3.61, SD 1.13), 4.0 (M 4.03, SD 1.14), and 4.0 (M 4.03, SD 1.40) respectively indicated strong analysis skills but moderate for inference and evaluation.

Overall pre-test subscale scores for induction and deduction were 5.0 (M 6.52, SD 1.54) and 9.0 (M 5.56, SD 2.24) thus indicated moderate for induction and strong for deduction skills. Group mean HSRT pre-test subscale scores for treatment versus control group observed higher subscale scores in induction (M 6.52, SD 1.54), deduction (M 6.1, SD 1.90) and inference (M 4.4, SD 0.94) for the treatment group are provided in Table 9.

Table 9

Group Mean HSRT Pre-test Subscale Scores

		HSRT analysis	HSRT inference	HSRT evaluation	HSRT inducion	HSRT deduction
Intervention	Mean	3.8	4.4	3.8	6.47	6.12
	N	17	17	17	17	17
	SD	0.90	0.94	1.31	1.59	1.90
Control	Mean	3.47	3.64	4.18	6.58	5.00
	N	17	17	17	17	17
	SD	1.32	1.22	1.42	1.54	2.48

Overall post-test subscale scores for analysis, inference and evaluation were 6.0 (M 3.36, SD 1.22), 5(M 3.62, SD 3.62), and 6.0 (M 3.76, SD 1.43) respectively indicating an increase in subscale mean scores, describing relative strength in these skills associated with critical thinking. Post-test subscale induction increased 48.0 (M 5.9, SD 1.90) while deduction remained consistent at 9.0 (4.82, SD 1.93). See Table 10 exhibits the Group Mean HSRT Post-test Subscale Scores.

Table 10

Group Mean HSRT Post-test Subscale Scores

		HSRT analysis	HSRT inference	HSRT evaluation	HSRT inducion	HSRT deduction
Intervention	Mean	3.26	3.53	3.71	5.85	4.65
	N	34	34	34	34	34
	SD	1.21	1.13	1.55	1.91	2.10
Control	Mean	3.46	3.71	3.82	6.03	5.00
	N	35	35	35	35	35
	SD	1.24	1.18	1.34	1.92	1.78

Reliability data for the overall test score and the five subscale scores was demonstrated with a Cronbach alpha of 0.81 (total score) and a range of 0.52 to 0.77 (subscales) (Facione, 2006).

Analyses of the Research Hypotheses

H_{01} - There will be no statistically significant difference in pre-test and post-test knowledge acquisition scores, as measured by the HESI Custom Exam, in first-semester junior baccalaureate nursing students who receive the traditional didactic lecture and those who receive the ACE.S- UCS scenario intervention.

Analysis of variance (ANOVA) was used to determine the effect of the ACE.S-UCS intervention on knowledge acquisition and if pre-test sensitivity existed. According to Polit and Beck (2017), "Analysis of Variance (ANOVA) is the parametric procedure for testing differences between means when there are three or more groups" (p. 388). Analysis of covariance (ANCOVA) was conducted using the pre-test and post-test scores from the HESI Custom Exam. Similar to ANOVA, Analysis of covariance (ANCOVA) test the significance of differences between means of two or more groups and "adjust scores on the dependent variable to remove the effect of the covariate" (Polit & Beck,

2017, p. 413). In this research study, the covariate pre-test is a confounding variable. A t-test was used to determine any statistical difference between groups.

Due to the research design, a total of 34 participants completed the HESI Custom Exam pre-test (Group 1 and 2), 71 participants completed the HESI Custom Exam post-test (Groups 1, 2, 3, 4). An initial inspection of mean overall post-test scores on HESI custom exam did not suggest a treatment effect of X, because of the post-test means of Groups 1 and 3, the groups receiving X, are similar and not higher than all the other groups. There were no significant differences at baseline between the pre-test and post-test groups shown in Table 11.

Table 11

Comparison of Mean Scores of HESI Custom Exam Knowledge Acquisition

Variable	Group	N	Mean	SD
HESI Pre-test	Group 1 (E1)	18	702.83	132.93
	Group 2 (C1)	16	722.68	140.74
	Group 3 (E2)	-	-	-
	Group 4 (C2)	-	-	-
HESI Post-test	Group 1 (E1)	18	614.33	198.49
	Group 2 (C1)	18	632.22	136.65
	Group 3 (E2)	17	565.64	176.74
	Group 4 (C2)	17	666.78	176.93

Note. Dashes indicate data was not obtained.

Pre-test (Group 1 & Group 2) calculated scores on the HESI for the participants in the study indicated a mean score (M 712.76, SD 134.94). The calculated post-test (Groups 2, 4, 5, 6) mean score was (M 619.74, SD 174.24) exhibited in Table 12.

Table 12

Comparison of Overall Pre-test and Post-test HESI Knowledge Acquisition Scores

	N	Minimum	Maximum	Mean	SD
HESI Pre-test	34	449	1048	712.76	134.94
HESI Post-test	71	193	981	619.74	174.24

The initial step in Braver and Braver's (1988) meta-analytic approach is to conduct a 2x2 between-groups ANOVA on the four post-test scores. The factors are treatment (yes vs. no) and pre-test (yes vs. no). Results are displayed in Table 13.

Table 13

Results of Analysis of Variance on Post-test Scores

Source	MS	df	F	*p*
Pretest vs Not (P)	802.26	1	0.027	0.871
Treatment vs. Not (T)	58404.89	1	1.938	0.169
P X T	32349.98	1	1.073	0.304
Error	1988952.04	66		

There is no significant interaction between the post-test scores for the pre-test factor at p 0.304, indicating no pre-test sensitization was detected. Since no significant interaction was detected for the pre-test factor, the researcher proceeded to an examination of the main effect of treatment. Overall, there was no significant difference F (1, 66) 1.938, p 0.169, in the main effects test on experimental versus control groups in HESI scores from pre-test to post-test and mean gain in groups who received the UCS educational intervention and those who did not receive the intervention as seen in Table 14.

Table 14

Mean HESI scores for Intervention and Control Groups

	Scores					
	Pre-test		Post-test		Gain	
Groups	Mean	SD	Mean	SD	Mean	SD
Intervention	702.83	132.93	614.00	198.49	-87.82	247.19
Control	722.68	140.74	632.22	136.65	-97.58	192.23

Note. This result is not significant.

Greater scores are associated with increased knowledge and predictive of NCLEX-RN success. Scores less than the recommended benchmark of 900 give direction for individual student remediation. Since there was no significant result in the main effects test, the next step is to further examine the treatment effect for significance in Groups 1 and 2 (the two pre-tested groups). The results of the ANCOVA on groups 1 & 2, was not significant, p 0.858 as displayed in Table 15.

Table 15

Analysis of Covariance on Groups 1 and 2

Source	MS	df	F	*p*
Treatment vs. Not	1017.26	2	0.033	0.858
Error	31198.807	31		

Note. This result is significant at $p < .001$

Because the ANCOVA results were not statistically significant F (2, 31) 0.033, p 0.858, on Groups 1 and 2, the strength of the relationship between the experimental and the control groups was not significant. However, the experimental group had a lower mean HESI post-test score (M 614, SD 198.49) when compared to the control group

(M 632.22, SD 136.65). Because of the lack of significance in ANCOVA, the researcher proceeded to an independent samples *t*-test performed on the scores of Group 3 and Group 4, the post-test only groups. Additionally, there was no significant effect for Group 3 and Group 4 based on t (32) 0.107, p 0.746, indicating no significant difference in participants' pre-test and post-test groups who received the UCS educational intervention and those who did not. For a final check, the meta-statistic was performed, which combined results of the *t*-test and ANCOVA. The meta-analytic result is not statistically significant, z*meta* (.858 + .746)/√2 1.137, p 0.256. Therefore, it was concluded that the meta statistic was not statistically significant and no evidence was demonstrated for the effect of the UCS on HESI post-test scores of all four groups examined.

Therefore, the researcher failed to reject Hypothesis 1.

Findings in the analysis of HESI in this study supported previous findings in Howard, et al., (2010). Similar to the findings in Howard et al., the results of this study also found no difference in student performance on the HESI pre-test and post-test exam among the three types of nursing programs.

H_{02} - There will be no statistically significant difference in pre-test and post-test handoff communication skill performance scores, as measured by the Handoff-CEX tool, in first-semester junior baccalaureate nursing students who receive the traditional didactic lecture and those who receive the ACE.S- UCS scenario intervention.

Analysis of variance (ANOVA) was used to determine the effects of the ACE.S-UCS on handoff communication skill performance and if pre-test sensitivity existed.

Analysis of covariance (ANCOVA) was conducted using the pre-test and post-test scores from the Handoff CEX instrument. A *t*-test was used to determine any statistical difference between groups.

Due to the research design, a total of 32 participants completed the Handoff - CEX pre-test (Groups 1 and 2), and 71 participants completed the Handoff - CEX post-test (Groups 1, 2, 3, 4). An initial inspection of mean overall post-test Handoff-CEX scores, suggested a treatment effect of X unqualified by pretest sensitization, because the post-test means of Groups 1 and 3, the groups receiving X, were similar and higher than all of the other means as confirmed in Table 16.

Table 16

Overall Mean scores for Handoff CEX

Variable		Group	N	Mean	SD
Handoff - CEX Provider Pre-test		Group 1 (E1)	17	4.12	1.11
		Group 2 (C1)	15	3.46	0.74
		Group 3 (E2)	-	-	-
		Group 4 (C2)	-	-	-
Handoff CEX Provider Post-test		Group 1 (E1)	17	4.35	1.73
		Group 2 (C1)	17	3.17	0.73
		Group 3 (E2)	18	3.89	0.96
		Group 4 (E1)	17	3.71	0.85
Handoff CEX Receiver Pre-test		Group 1 (E1)	17	4.00	0.79
		Group 2 (C1)	15	3.53	0.91
		Group 3 (E2)	-	-	
		Group 4 (C2)	-	-	
Handoff CEX Receiver Post-test		Group 1 (E1)	17	4.41	1.33
		Group 2 (C1)	17	3.29	0.77
		Group 3 (E2)	18	3.72	0.95
		Group 4 (C2)	17	3.76	0.66

Note. Dashes indicate data was not obtained.

At baseline, there were no statistically significant differences between the intervention and comparison groups in pre-test scores (See Table 16). Overall scores on the Handoff - CEX post-test ranged from 1 - 6. The Pre-test (M 3.77, SD 1.11) compared to the Post-test (M 3.90, SD 1.17) is displayed in Table 17.

Table 17

Comparison of Overall Pre-test and Post-test Handoff - CEX Scores

		N	Minimum	Maximum	Mean	SD
Handoff	CEX Pre-test	32	3.0	7.0	3.77	1.11
Handoff	CEX Post-test	71	1.0	6.0	3.91	1.17

The initial step is to perform a 2 X 2 between- groups ANOVA on the four post-test scores. The factors were treatment (yes vs. no) and pre-test (yes vs. no). The results are displayed in Table 18.

Table 18

Results of Analysis of Variance on Post-test Scores

Source	MS	df	F	*p*
Pretest vs Not (P)	2.716	1	2.667	0.107
Treatment vs. Not (T)	18.435	1	18.104	0.000
P X T	6.487	1	6.370	0.014
Error	1.018	67		

Since a two-way ANOVA yielded a main effect for the pre-test factor F (1, 67) 6.370, p 0.014 detecting pre-test sensitivity, the next step was to perform a simple main effects test on the pre-tested groups (G1 & G2) and a main effects test on un-pre-tested groups (G3 & G4). An ANOVA yielded a statistically significant interaction between

pre-tested groups for Handoff - CEX post-test scores, F (1,36) .32, p 0.00, and no statistically significant result for un-pretested groups F (1, 36) .32, p 0.579. Since the result was statistically significant, the next step is to conclude that the treatment had an effect even on the un-pre-tested groups. Using Braver and Braver (1988), as a guide, when the pattern exists that there is a statistically significant simple effect for treatment in the pre-tested groups and not in the un-pre-tested groups, the analysis terminates with the conclusion that there is evidence of a treatment effect but only for the pre-tested groups. Therefore, the researcher failed to reject Hypothesis 2.

H_{03}- There will be no statistically significant difference in pre-test and post-test critical thinking scores, as measured by the Health Sciences Reasoning Test (HSRT), in first-semester junior baccalaureate nursing students who receive the traditional didactic lecture and those who receive the ACE.S-UCS handoff scenario intervention.

Analysis of variance (ANOVA) was used to determine the effects of the ACE.S-UCS intervention on critical thinking and if pre-test sensitivity existed. Analysis of covariance (ANCOVA) was conducted using the pre-test and post-test scores from the HSRT. A t-test was used to determine any statistical difference between groups.

Due to the research design, a total of (N 35) participants completed the HSRT pre-test (Groups 1 and 2), and 70 (N 70) participants completed the HSRT post-test (Groups 1, 2, 3 and 4). An initial inspection of the overall mean post-test scores for HSRT, suggests no treatment effect of X, because the post-test means of Groups 1 and 3, the groups receiving X, are similar to one another and not higher than all of the other means presented in Table 19.

Table 19

Comparison of Mean Scores of HSRT Critical Thinking

Variable	Group	N	Mean	SD
HSRT Pre-test	Group 1 (E1)	18	19.00	3.87
	Group 2 (C1)	18	17.63	4.44
	Group 3 (E2)	-	-	-
	Group 4 (C2)	-	-	-
HSRT Post-test	Group 1 (E1)	18	18.00	4.25
	Group 2 (C1)	18	17.00	4.58
	Group 3 (E2)	17	16.00	4.44
	Group 4 (C2)	17	17.52	4.75

Note. Dashes indicate data was not obtained.

At baseline, there were no statistically significant differences between the intervention and comparison groups in pre-test scores. The Pre-test (M 18.85, SD 4.04) compared to the Post-test (M 17.07, SD 4.28). An analysis of overall mean scores in pre-test and post-test HSRT Critical Thinking are presented in Table 20.

Table 20

Comparison of Overall Pre-test and Post-test Critical Thinking Scores

	N	Minimum	Maximum	Mean	SD
HSRT Pre-test	35	8.0	26.00	18.85	4.04
HSRT Post-test	70	9.0	24.00	17.07	4.28

The initial step is to perform a 2X2 between-groups ANOVA on the four post-test scores. The results are displayed in Table 21.

Table 21

Results of Analysis of Variance on Post-test Scores

Source	MS	df	F	*p*
Pretest vs Not (P)	111.02	1	6.428	0.014
Treatment vs. Not (T)	8.891	1	0.515	0.476
P X T	7.486	1	0.433	0.513
Error	17.272	66		

The lack of a main effect interaction F (1,66) 0.433, p 0.513 for the pre-test factor, resulted in the researcher testing the main effects experimental versus control groups. Results of ANOVA on Main effects of UCS intervention treatment between the experimental (Group1 and Group 3) and control groups (Group 2 and Group 4) for intervention effect was not statistically significant F (1,66) 0.414, p 0.522, indicating the UCS educational intervention was not effective in improving HSRT, critical thinking post-test scores. Since the main effect result was not statistically significant, further examination of the treatment effect in Groups 1 and 2 using ANCOVA to investigate any covariation within and between groups. The results of the ANCOVA test F (2,34) 0.405, p 0.671, indicated no difference in critical thinking scores between the experimental and control groups as displayed in Table 22.

Table 22

Analysis of Covariance on Groups 1 and 2

Source	MS	df	F	*p*
Treatment vs. Not	3.334	2	0.405	0.671
Error	255.298	31		

Note. This result is significant at $p<.001$.

Since, adjusting for pre-testing did not indicate a statistically significant difference in post-test scores, the researcher conducted an independent samples *t*-test as suggested by Braver and Braver (1988)'s guide, on the scores of Groups 3 and 4, the post-test only groups. The results of the *t*-test were not statistically significant *t* (32) .042, p 0.838. To further confirm findings in this study, a meta-analysis was performed. The meta-analysis combined the *t*-test result with the ANCOVA results and found no statistically significant result, zmeta (.671 + .838)/√2 1.07, p 0.285. As a result, it was concluded that the meta statistical analysis was not statistically significant, confirming no significant differences in the experimental and control groups on HSRT post-test scores after the UCS treatment. Therefore, the researcher failed to reject Hypothesis 3.

H_{04} - There will be no statistically significant relationship between the selected demographic variables (age, race, sex, marital status, class status, enrollment and cumulative GPA) and knowledge acquisition as measured by HESI post-test scores, handoff communication skill performance, as measured by Handoff-CEX post-test scores, and critical thinking as measured by Health Sciences in Reasoning Test post-test scores.

Pearson Product-Moment Correlation Coefficient (r) and Kendall's Tau were used to test for relationships between selected independent variables and the dependent variables. No statistically significant relationships existed between age and HESI post-test scores (p .354), age and post-test HSRT (p .160) and age and Overall Handoff Communication (p .808). Likewise, no statistically significant relationships existed between cumulative GPA and HESI post-test scores (p .311) or cumulative GPA and HSRT post-test scores (p .146) and cumulative GPA and Overall Handoff Communication (p .834) shown in Table 23.

Table 23

Correlation between Dependent Variables and Selected Demographic Variables

Variable	Age	cGPA
Post-test HESI Score		
Pearson Correlation	-0.133	0.127
Sig. (2-tailed)	0.354	0.311
N	70	66
Post-test HSRT		
Pearson Correlation	-0.170	0.181
Sig. (2-tailed)	0.160	0.146
N	70	66
Overall Handoff Communication		
Pearson Correlation		
Sig. (2-tailed)	-0.030	-0.026
N	0.808	0.834
	69	66

Note. *p<.05, two-tailed; ** *Correlation is significant at the 0.01 level (2 tailed).*

Kendall Tau's (*Tb*) correlation coefficient found a statistically significant relationship between marital status and HSRT post-test scores (r -.20, p 0.05). There was no statistically significant relationship between student's race and HESI post-test scores (p 0.071), race and HSRT post-test scores (p 0.722) and race and Overall

Handoff Communication (p 0.842). There was no relationship between sex and HESI post-test scores (p 0.481), sex and HSRT post-test scores (p 0.722), and sex and the overall Handoff Communication (p 0.350) post-test scores. There was no relationship between marital status and HESI post-test scores (p 0.257) and no relationship between marital status and Overall Handoff Communication (p 0.625). There was no relationship between class status and HESI post-test scores (p 0.409), class status and HSRT post-test scores (p 0.974), and class status and Overall Handoff Communication (p 0.282). There was no statistically significant relationship between enrollment and HESI post-test scores (p 0.330), and enrollment and HSRT post-test scores (p 0.803), and enrollment and Overall Handoff Communication (p 0.124). See Table 24 for the Correlation between selected Demographic Variables and Dependent Variables.

Table 24

Correlation between Dependent Variables and Selected Demographic Variables

Variable	Race	Sex	Marital Status	Class Status	Enrollment
Post-test HESI Score					
Kendall Tau Correlation	0.172	-0.070	-0.111	-0.082	-0.096
Sig. (2-tailed)	0.071	0.481	0.257	0.409	0.330
N	70	70	70	70	70
Post-test HSRT					
Kendall Tau Correlation	-0.035	0.144	-0.200*	0.003	0.025
Sig. (2-tailed)	0.722	0.0157	0.047	0.974	0.803
N	70	70	70	70	70
Overall Handoff Communication					
Kendall Tau Correlation	-0.021	-0.104	-0.054	0.120	0.171
Sig. (2-tailed)	0.842	0.350	0.625	0.282	0.124
N	69	69	69	69	69

Note. *p<.05, two-tailed; ** Correlation is significant at the 0.01 level (2-tailed)

As a result of this finding, the researcher failed to reject Hypothesis 4.

H_5 - There will be a statistically significant relationship between knowledge acquisition, handoff communication skill performance, and critical thinking in first-semester junior baccalaureate nursing students.

Results of the Pearson Product-Moment Correlation Coefficient (r) test revealed a moderate positive relationship (r 0.32, *p* 0.01) between knowledge acquisition as measured by HESI Post-test and critical thinking as measured by HSRT Post-test. These findings are presented in Table 25.

Table 25

Correlation between HESI post-test scores, HSRT post-test scores, and Overall Handoff Communication

Variable	N	Pearson Correlation	Sig. (2-tailed)
Post-test HESI Score	70	0.322	0.007**
Post-test HSRT	70	0.148	0.228
Post-test Overall Handoff Communication	68	-0.178	0.146

Note. $p<.05$, two-tailed; ** Correlation is significant at the 0.01 level (2-tailed).

Pearson's correlation shows support for Brandon and All's (2010) Constructive Theory Model (CTM), that as students construct or acquire new knowledge, and move from level to level, critical thinking or problem solving is also emphasized. First semester baccalaureate nursing students with higher levels of Knowledge Acquisition scored slightly higher on critical thinking than participants with lower post-test scores. Data analysis revealed that there was a statistically significant correlation between knowledge acquisition and critical thinking score. Statistical evidence supports hypothesis 5.

Summary

The purpose of this study was to examine the effect of the UCS teaching pedagogy. More specifically, this study tested the effects of a NLN-ACE.S scripted unfolding case scenario on critical thinking, knowledge acquisition, and handoff communication skill performance in first semester, junior baccalaureate nursing students in an HBCU in southeastern Louisiana. Five hypotheses were tested in this study. Analysis of Variance was used to test H1, H2, and H3. Pearson's (r) was used for continuous variables of age, cGPA, HESI, Handoff-CEX, HSRT pre-test and post-test scores and Kendall's tau (for nominal-categorical variables of race, sex, marital status, class status, and enrollment) was used to test H4 and H5.

Analysis of variance results indicated no statistically significant difference was found between knowledge acquisition, handoff communication skill performance, and critical thinking pre-test and post-test scores. However, when compared, participants exposed to the UCS educational intervention had higher mean Handoff-CEX provider and receiver skill performance scores than participants who had been exposed to the traditional didactic lecture. Participants measured an average of 1.0 to 1.5 points higher in each domain of handoff receiver; whereas participants with traditional didactic lecture measured no difference. Participants with traditional didactic lecture continued to score poorly on the Handoff-CEX provider and receiver post-test. Pearson correlation results indicated there was a moderate positive correlation between knowledge acquisition and critical thinking. No correlation was found between demographic variables (age, race, sex, enrollment, class status, and cumulative GPA) and knowledge acquisition, handoff-CEX, and critical thinking. However, some correlation was found between marital status and HSRT post-test scores. Lastly, participants with higher overall knowledge acquisition

tend to have higher overall critical thinking skills. Table 26 displays a summary of the research findings.

Table 26

Summary of Research Findings

Research Hypothesis	Instrument	Statistical Tests	Findings
H_1 -There will be no statistically significant difference in pre-test and post-test knowledge acquisition scores, as measured by the HESI Custom Exam, in first-semester junior baccalaureate nursing students who receive the traditional didactic lecture and those who receive the ACE.S- UCS scenario intervention.	HESI	ANOVA ANCOVA *t*-test	No statistically significant difference was found F (1, 66) = 1.938, p=.169). The mean post-test HESI scores (M= 614.00, SD=198.49) were lower in the intervention groups when compared to the control groups (M= 632.22, SD= 136.65).
H_{02} - There will be no statistically significant difference in pre-test and post-test handoff communication skill performance scores, as measured by the Handoff-CEX tool, in first-semester junior baccalaureate nursing students who receive the traditional didactic lecture and those who receive the ACE.S- UCS scenario intervention.	Handoff-CEX	ANOVA ANCOVA *t*-test	No statistically significant difference was found in handoff communication skill performance. Pre-test sensitization was detected, *p*= .014. Simple main effect (G1 & G2) p=.000. Simple main effect (G3 & G4) *p*=.579. The overall mean post-test (M=3.9. SD=1.17) increased from the pre-test scores (M=3.77, SD=1.11) in handoff communication skill performance.
H_{03}- There will be no statistically significant difference in pre-test and post-test critical thinking scores, as measured by the Health Sciences Reasoning Test (HSRT), in first-semester junior baccalaureate nursing students who receive the traditional didactic lecture and those who receive the ACE.S-UCS handoff scenario intervention.	HSRT	ANOVA ANCOVA *t*-test	No statistically significant difference was found F (1, 66) = .414, *p*= .522. The mean post-test HSRT scores (M= 16.75, SD= 4.28) were higher in the control groups when compared to the intervention groups (M= 17.41, SD= 4.32).

(continued)

Research Hypothesis	Instrument	Statistical Tests	Findings
H_{04} - There will be no statistically significant relationship between the selected demographic variables (age, race, sex, gender, marital status, and cumulative GPA) and knowledge acquisition as measured by HESI post-test scores, handoff communication skill performance, as measured by Handoff-CEX, and critical thinking as measured by Health Sciences in Reasoning Test post-test scores.	Demographic questionnaire HESI Handoff communication-CEX HESI	ANOVA ANCOVA *t*-test	No correlation was found between select demographic variables and knowledge acquisition, Handoff-CEX, and HSRT variables.
H_{05} - There will be a statistically significant relationship between knowledge acquisition, handoff communication skill performance, and critical thinking in first-semester junior baccalaureate nursing students.	HESI Handoff communication-CEX HSRT	Descriptive statistics Pearson's correlation coefficient Kendall's Tau	A moderate positive correlation was found ($r(70) = .322$, $p<.05$), indicating a statistically significant relationship between knowledge.

CHAPTER V

DISCUSSIONS, IMPLICATIONS, AND RECOMMENDATIONS

This chapter will present a discussion of implications, limitations, and recommendations for future research in this study. Social Constructivism and Brandon and All's (2010) Constructive Theory Model were used to guide this research. A Solomon Four Group research design was used to examine the effectiveness of an UCS educational intervention to improve knowledge, skill, and critical thinking in first-semester junior level baccalaureate nursing students. The HESI custom exam, Handoff-CEX, and HSRT were the instruments used to measure knowledge acquisition, handoff communication skill performance, and critical thinking respectively. Analysis of variance was utilized to determine if statistical significance existed for the mean difference between HESI, Handoff-CEX, and HSRT pre-test and post-test after the implementation of an unfolding case study educational intervention.

Implications of Findings

The findings of this study suggest that the unfolding case study teaching pedagogy improves handoff communication skill performance in baccalaureate nursing students. This is consistent with previous studies that used the case study method with features of role-play, standardized SBAR communication tool, skill practice and debriefing to improve communication (Avallone & Weideman, 2015; Kesten, 2011). The NLN ACE.S scripted unfolding case in this research included pre-clinical activities

(PPT lecture/video/ISBAR instruction), faculty training, communication workshop (role-play), and debriefing/guided reflection to combine didactic and interactive methods that promoted critical thinking.

The UCS in handoff communication guides nurse educators to adapt and incorporate into nursing curricula. Furthermore, the NLN-ACE.S scripted UCS provides a real-world learning experience in HOC during patient transfer across settings that highlights essential knowledge and skills in geriatric content. The use of Quality and Safety Education for Nurses (QSEN) competencies can also be incorporated in the classroom and clinical activities, allowing students to practice ISBAR and encourage the integration of teaching a culture of safety. The development of handoff education and training introduced early in the nursing curriculum brings consistency in method, teaching, and evaluation that can potentially assist educators in minimizing errors and ensuring continuity of care associated with transitions across various settings.

Surprisingly, no significant differences in overall post-test scores of knowledge acquisition and critical thinking were found. These results are similar to Howard's et al., (2010) study that found a decrease in knowledge after exposure to interactive case studies. Howard (2010) indicated these results were puzzling because it was highly unlikely that the students unlearned after the implementation of interactive case studies. Howard's (2010) study concluded that several possible explanations might have influenced the change in knowledge post-test scores: a) fatigue at the end of the session; and b) the lack of classroom teaching experience in clinical faculty and graduate assistants used may have influenced the differences in post-test findings. These explanations paralleled observations in this research study.

Research findings are inconsistent regarding the use of HESI custom exams to test knowledge of course content in nursing education (Buckner, 2013). One study in this review used an HESI test and concluded no statistically significant difference in post-test scores on student's knowledge among three nursing programs after exposure to an interactive case study (Howard et al., 2010). Additionally, prior studies that used instructor generated tests to evaluate knowledge after the implementation of unfolding case scenarios also observed no improvement in post-test scores of the intervention group (Hessler & Henderson, 2013; McCormick, et al., 2013; Trobec & Starcic, 2015) and further reported a lack of higher level thinking in factual questions limited findings (Majeed, 2014). In fact, these same studies reported an increase in the scores of the comparison groups that used the traditional lecture as the standard for the program but failure to report test item construction and validity and reliability of the exam limits conclusions (Hessler & Henderson, 2013; McCormick et al., 2013).

Furthermore, standardized exams that are not used for evaluative measures in student performance are not taken seriously by some students. Also, HESI experts contend that although faculty sets policy, HESI adheres to classic test theory, in that testing without consequences is a waste of time (HESI, 2010). It is also worth noting that 78% of students participating in this research were predominantly African American, which raises the issue of the impact of standardized tests on minority students. As mentioned by Grant (2006), standardized tests may be oppressive to minorities and facilitate segregation based on students' scores. There is little evidence that addresses how standardized exams are unbiased and not harmful to minority students (NLN. 2012;

Spurlock, 2006). This is alarming since minorities are underrepresented in nursing programs (Benner et al., 2010).

Few studies have conducted research using the Handoff (CEX). Only one pilot study was found to have assessed the feasibility and validity of the Handoff CEX instrument (Horwitz et al, 2012). Research in this study advances Handoff-CEX research by extending it to undergraduate students in a baccalaureate nursing degree program. Additionally, research in this study extended Avallone and Weideman's (2015) pilot study in 28 accelerated baccalaureate nursing students to a traditional historically black college and university baccalaureate nursing program.

Personal or instrument variations may have contributed to pre-test sensitization detected in the Handoff-CEX analysis in this research study (Polit & Beck, 2017). The student's score may have been influenced by fatigue, mood or motivation to cooperate. It may be simply that a student's anxiety level changed their pulse rate. In some cases, direction on the instrument were poorly understood which may have affected scores. In addition, questions from the student participants' during simulation and role-play may have been interpreted differently from student to student.

Research in this study supported Kesten's (2015) finding that students perceived that practice and role-play using SBAR was more effective than traditional lectures. All students reported wanting more practice time and use of additional examples in clinical simulation. Because of this study, more African American students in a historically black college and university are now included in this finding.

Similar to previous studies the researcher found no improvement in critical thinking scores after exposure to the UCS (Carter & Welch, 2016). This finding maybe due to the fact the HSRT test was designed for health science professionals and not for nursing students. This research study is the first to explore critical thinking in the UCS in African American students in a historically black college and university using the HSRT test.

Application to Conceptual/Theoretical Framework

Social Constructivism and Brandon and All's (2010) Constructive Theory Model formed the theoretical framework for this research study. Findings support the basic tenet of Social Constructivism in that students learn by doing rather than observing in a social context. As the case study unfolded, handoff communication skill performance was improved. The CTM provided the context for teaching the UCS that connected didactic instruction in the classroom and practice mimicking the real world of nursing. According to Brandon and All (2010) the student's interaction, reflection, and the instructor's immediate feedback used in scaffolding created the potential for learners to construct new knowledge and skill, emphasizing critical thinking.

In this study, knowledge acquisition was measured by HESI custom exam. Handoff communication skill performance was measured by Handoff-CEX tool. Critical thinking was measured by the HSRT instrument. Students that scored higher on knowledge of handoff communication in gerontological content scored slightly higher on critical thinking than participants with lower post-test scores. This finding further supported Brandon and All's (2010) CTM that as students moved from the current level of knowledge and skill to a higher level of knowledge and skill, critical thinking was

enhanced. The overall results from this research concluded that participants exposed to the UCS experienced a measured increase in handoff communication skill performance. Social Constructivism and Brandon and All's (2010) Constructive Theory Model were congruent with this research study. Both theories were used to develop and design the UCS educational research.

Strengths of the Study

This research study had several strengths. First, the large sample of African-American students, which has been lacking in prior studies as it relates to the impact of standardized testing on minority students. Secondly, the use of the Solomon Four Group Design increased rigor of the research study. Thirdly, the research study filled a statistically significant gap in research as it relates to the UCS in knowledge acquisition, handoff communication skill performance, and critical thinking. Fourth, findings from this research study validate the importance of HOC education and training in baccalaureate nursing curriculum and active learning strategies that integrate knowledge, skill and critical thinking in meeting QSEN objectives. Lastly, findings from this research study validate the importance of using Social Constructivism and the Constructive Theory Model as guidance in nursing education and research.

Limitations of the Study

This research study had several limitations. First, the sample and size limited findings. The sample was drawn from one geographical area with a predominantly African-American student population from one School of Nursing using one cohort of pre-licensure nursing students. Therefore, transferability of findings need to be interpreted with caution.

Secondly, results indicated that for the HESI custom exam and HSRT, students performed worse on the post-test versus the pre-test. Despite the use of primary faculty in the classroom and clinical setting for the implementation of this unfolding case study, a lack of experience in the use of an unfolding scenario and collecting data using each instrument during a research study may limit findings. Additionally, the HSRT assesses health professionals and is not unique to nursing. Therefore it may not adequately assess critical thinking needed by student nurses (Carter et al., 2015).

Thirdly, the time requirement for implementation of the UCS for both student and faculty may have impacted study findings (Arrue & Caballero, 2015). In addition, faculty buy-in created challenges which may influence findings. Despite training sessions and recommendations from Arrue and Caballero's (2015) study to inform participants and instructors of time requirement, faculty and students experienced frustration with the use of multiple strategies and the number of evaluative methods in the UCS approach.

Lastly, researcher bias may have influenced study results. The primary researcher serves in the role of full-time faculty at the institution where the study took place. Additionally, reflective journaling notes and regular meetings with the major professor, methodologist, and peer debriefer were used. To increase the credibility of findings, the researcher strictly adhered to protocol and strict data collection procedures.

Recommendations for Nursing Education

Findings from this study may assist nurse educators in providing formal education and training in HOC skills. The UCS can be introduced early in the curriculum and can adapt and incorporate quality and safety competencies in the classroom, simulation, and clinical setting to bridge the education practice gap. The NLN-ACE.S scripted UCS can

be used by nurse educators to integrate QSEN competencies, essential knowledge and skills in geriatric content, and nurse-to-nurse communication across the curriculum.

Recommendations for Nursing Practice

Findings from this study may provide insight to nurses, administrators and other health care professionals in providing standardized handoff communication education and training for new nurses. Effective handoff reports that are structured, clear, brief, complete and timely with accurate patient information minimizes errors and ensures continuity of care. Therefore, improving communication during the handoff process can have an impact on unnecessary hospitalizations and readmissions, especially for the older adult at the time of transition across settings.

Recommendations for Health Policy

Findings from this study may provide information for policy makers in meeting the challenge to support a highly-trained nursing workforce that ensures quality and safety in the care of older adults. Specifically, information for policy makers that allows decisions to advocate for increased funding at the local, state and federal levels in the agenda to decrease costs associated with unnecessary hospitalizations and readmissions in older adults.

Recommendations for Future Research

Findings from this study may provide information for research in providing evidence using the most rigorous research design. The Solomon Four Group research design tested the effectiveness of an UCS intervention on three learning variables (knowledge acquisition, handoff communication skill performance, and critical thinking)**.** Future studies with larger sample sizes, across diverse populations and multiple settings

is needed to further evaluate the effectiveness of the UCS. Studies that build on Social Constructivism and The Constructive theory model can provide clear conceptual and theoretical guidance of the interconnectedness of knowledge, skills, and critical thinking involved in preparing future nurses. Future studies may want to investigate further the relationship between marital status and critical thinking.

Additionally, this analysis evokes interesting thoughts regarding bias in standardized tests for minority nursing students and warrants future investigation with an experimental and control group. Nursing specific valid and reliable instruments to measure critical thinking (Carter et al, 2015) in the UCS teaching pedagogy also require future investigation. These recommendations can positively impact nursing education, practice, health policy, and research and lead to a better understanding of best practices in the education and training of handoff communication using nursing students.

Summary

This quasi-experimental research using a Solomon Four-Group design was conducted to examine the effectiveness of an UCS teaching pedagogy on critical thinking, knowledge acquisition, and handoff communication skill performance in the first semester, junior, baccalaureate nursing students. Findings from the current study identified improvement in HOC provider and receiver skill performance in the first semester junior baccalaureate nursing students. Also, improved sub-skills in analysis, inference, evaluation, and induction in critical thinking were found to be improved in baccalaureate nursing students. Those students that scored higher in knowledge acquisition also scored higher in critical thinking. Knowledge acquisition and overall critical thinking scores were not improved after exposure to the UCS educational

intervention. Findings in this study suggest a need to further investigate the effect of the UCS in larger sample sizes, diverse populations, and multiple settings. Additionally, studies using Social Constructivism and the Constructive Theory Model can provide clear conceptual and theory guidance for future research. This study provides nurse educators, practitioners and other health care professionals with insight into formal education and training of HOC, using the UCS teaching pedagogy, especially in older adults as they transition across health care settings.

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APPENDICES

APPENDIX A

LETTER TO DEAN FOR APPROVAL TO CONDUCT RESEARCH

February 22, 2016

RE: Permission to Conduct Research

Dear Dean Janet Rami,

I am writing to request permission to conduct a research study at Southern University and A&M College of Nursing and Allied Health in the undergraduate program. As you know, I am currently enrolled as a graduate student in the PhD program here at Southern University and A&M College School of Nursing and Allied Health and am in the process of drafting my proposal. The study is entitled, *The Effect of an Unfolding Case Study on Critical Thinking, Knowledge Acquisition, and Handoff Communication in Baccalaureate Nursing Students.*

I hope that the school administration will allow me to recruit 90 students enrolled in the NURS 304 Health Deviations I course to complete a demographic questionnaire, HESI Custom Exam, Handoff Communication Clinical Examination instrument (CEX), and the Health Sciences in Reasoning Test (HSRT). Students volunteering to participate will be given a consent form to be signed and returned to the primary researcher. The educational intervention will take place in the classroom and clinical laboratory setting with assigned course faculty.

If approval is granted, student participants will complete the forms in a classroom prior to and after the intervention. The responses to all forms will remain confidential and anonymous. No costs will be incurred by the students or the school.

Your approval to conduct this study would be greatly appreciated.

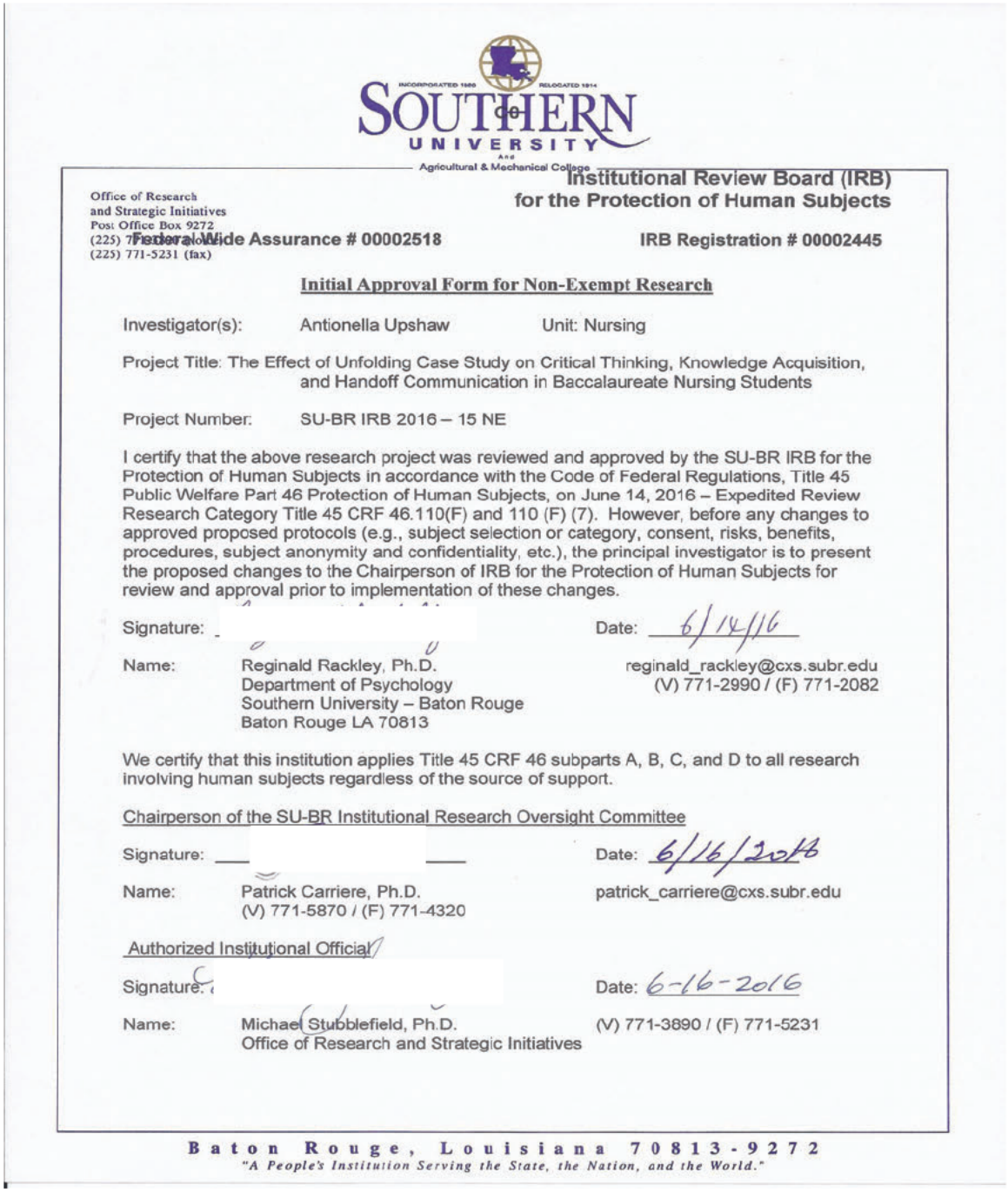
Sincerely,

Antionella Upshaw

Antionella Upshaw, MSN, RN
Doctoral student

APPENDIX B

INITIAL APPROVAL FORM FOR NON-EXEMPT RESEARCH



SOUTHERN UNIVERSITY
And
Agricultural & Mechanical College

Office of Research
and Strategic Initiatives
Post Office Box 9272
(225) 771-3990 (voice)
(225) 771-5231 (fax)

Institutional Review Board (IRB)
for the Protection of Human Subjects

Federal-Wide Assurance # 00002518 **IRB Registration # 00002445**

Initial Approval Form for Non-Exempt Research

Investigator(s): Antionella Upshaw Unit: Nursing

Project Title: The Effect of Unfolding Case Study on Critical Thinking, Knowledge Acquisition, and Handoff Communication in Baccalaureate Nursing Students

Project Number: SU-BR IRB 2016 – 15 NE

I certify that the above research project was reviewed and approved by the SU-BR IRB for the Protection of Human Subjects in accordance with the Code of Federal Regulations, Title 45 Public Welfare Part 46 Protection of Human Subjects, on June 14, 2016 – Expedited Review Research Category Title 45 CRF 46.110(F) and 110 (F) (7). However, before any changes to approved proposed protocols (e.g., subject selection or category, consent, risks, benefits, procedures, subject anonymity and confidentiality, etc.), the principal investigator is to present the proposed changes to the Chairperson of IRB for the Protection of Human Subjects for review and approval prior to implementation of these changes.

Signature: Date: 6/14/16

Name: Reginald Rackley, Ph.D.
Department of Psychology
Southern University – Baton Rouge
Baton Rouge LA 70813
reginald_rackley@cxs.subr.edu
(V) 771-2990 / (F) 771-2082

We certify that this institution applies Title 45 CRF 46 subparts A, B, C, and D to all research involving human subjects regardless of the source of support.

Chairperson of the SU-BR Institutional Research Oversight Committee

Signature: Date: 6/16/2016

Name: Patrick Carriere, Ph.D.
(V) 771-5870 / (F) 771-4320
patrick_carriere@cxs.subr.edu

Authorized Institutional Official

Signature: Date: 6-16-2016

Name: Michael Stubblefield, Ph.D.
Office of Research and Strategic Initiatives
(V) 771-3890 / (F) 771-5231

Baton Rouge, Louisiana 70813-9272
"A People's Institution Serving the State, the Nation, and the World."

APPENDIX C

COVER LETTER

Date

RE: The Effect of an Unfolding Case Study on Critical Thinking, Knowledge Acquisition, and Handoff Communication in Baccalaureate Nursing Students

Dear…..,

You are invited to participate in an unfolding case research study exploring critical thinking, knowledge acquisition, and handoff communication in junior baccalaureate nursing students. This study is being conducted by Antionella "Shelley" Upshaw, a doctoral student at Southern University and A&M College of Nursing and Allied Health in Baton Rouge, Louisiana. The study will examine the effect of an unfolding case study on critical thinking, knowledge acquisition, and handoff communication skill performance in junior baccalaureate nursing students in an HBCU utilizing an NLN-ACE.S scripted unfolding case scenario learning approach. Participant characteristics such as age, race, sex, gender, marital status, and cumulative grade point average (GPA). If you ae interested in participating in this study, please review the enclosed information and complete the enclosed consent form. If you have any questions regarding the study, you may contact the principal investigator at (225) 603-4909. Thank you for your time and consideration.

Sincerely,

Antionella "Shelley" Upshaw, MSN, RN

APPENDIX D

INFORMED CONSENT

Southern University – Baton Rouge (SUBR)

Informed Consent Form

Title of Study:
The Effect of an Unfolding Case Study on Critical Thinking, Knowledge Acquisition, and Handoff Communication in Baccalaureate Nursing Students.

Investigators:
Principal Investigator Antionella Upshaw
Southern University and A&M College
Graduate Nursing Student
P.O. Box 11794
Baton Rouge, LA 70813
Telephone Number (225) 603-4909
E-Mail address antionella_upshaw@subr.edu

Purpose of Study and Procedures:
The purpose of this study is to examine the effectiveness of an ACE.S scripted unfolding case study, as a teaching pedagogy on critical thinking, knowledge acquisition, and handoff communication skill performance in the first semester, junior baccalaureate nursing students.

Setting:
The setting will be in the classroom and the simulation laboratory in a baccalaureate school of nursing program from a historically black college and university (HBCU) in southeastern Louisiana.

Eligible to Participate:
All students enrolled in NURS 304 Health Deviations I course are eligible to participate. Ninety students will be recruited and involved in the study. The following inclusion criteria in order to participate in this study: (1) enrolled in the traditional baccalaureate nursing program; (2) identify as a first semester junior level baccalaureate nursing student enrolled in NURS 304 Health Deviations I. In addition, the following individuals, will be excluded from this study: (1) not classified as a first semester junior level nursing student; and (2) not enrolled in the NURS 304 Health Deviations I course.

Procedures for Participation in the Study:
Subjects will be recruited on the first day of class during the NURS 304 Health Deviations I lecture class. All subjects will complete the demographic questionnaire, which will take 5 minutes to complete. Before you can participate in the study, you will be asked to read and sign the consent form. After voluntary consent is obtained, participants will be given a packet with a five - digit code and asked to answer items on a questionnaire, by circling each response with a pen or pencil. Participants will be informed not write their names anywhere on the questionnaire. As the principal investigator for this research study, I will be the only person collecting data from individuals agreeing to participate in the study.

Risks or Discomforts to Subjects:
Potential risks may include (1) a feeling of personal apprehension concerning the content in the questionnaires; (2) a feeling by the participants that their personal responses will be shared with others, especially clinical instructors; and (3) possible fatigue as it relates to the time needed to complete questionnaires.

Benefits to Subjects:
The potential benefits are intended to enhance learning in handoff communication process and patient safety. Subjects may gain added clarity and increased knowledge and may even gain greater self-awareness in disease process and communication skills. Subjects may also gain experience in critical thinking.

Alternatives to Participation in the Study:
Participants can choose not to participate.

Questions or Problems:
Subjects can contact the principal investigator's major professor, Dr. Jacqueline Hill, PhD., Associate Professor & Chair, Undergraduate Program, Southern University and A&M College School of Nursing, P.O. Box 11794, Baton Rouge, LA 70813; Voice (225) 771-2663; Facsimile (225) 771-2651; email jacqueline_hill@subr.edu.

If you have any questions or concerns about your rights as a research volunteer in this study or you want to report a research-related injury, contact Dr. Patrick Carriere, PhD., Chairperson, Institutional Research Oversight Committee, P.O. Box 9272, Southern University-Baton Rouge, LA 70813-1241; Voice 225-771-5290; Facsimile (225) 771-5721; E-mail Patrick_carriere@subr.edu

Subject's Right to Privacy
Every effort will be made to maintain subjects'/participants anonymity and the confidentiality of their study records. Study findings will be published. Study findings will be presented during dissertation defense. The private information of the subject/participant, such as your name and other identifying information will not be included in any presentation, report, or publication.

Subject's Right to Refuse to Participate or Withdraw:
Participation is voluntary; refusal to participate involves no penalty or loss of benefits that is the subject is otherwise entitled. Subjects may discontinue participation without penalty or loss of benefits that the subjects are otherwise entitled. Subjects/participants may withdraw from the study at any time without penalty. The principal investigator(s)/researcher(s) may terminate the participation of subjects/participants at any time without regard to the subject's consent. Subject's failure to complete study procedures or to answer all questions could result in the data being not being used in the study.

Financial Information:
Participants will not incur any charges or costs to participate. Participants will also not be compensated for participation in the study.

The study has been discussed with me and all my questions have been answered. I understand that additional question regarding the study should be directed to the study researcher(s)/investigator(s). I agree to the terms above and acknowledge that I have been given a copy of the consent form. I understand that I have not waived any of my legal rights by signing this form.

Signatures:

_____ _____

Signature of Volunteer **Date**

_____

Signature of Person Administering Informed Consent

_____

Signature of Principal Investigator/Researcher

_____

Printed Name of Principal Investigator

The study volunteer has indicated to me that the volunteer is unable to read. I certify that I have read this consent form to the volunteer and explained that by completing the signature line above the volunteer has agreed to participate.

_____ _____

Signature of Reader **Date**

APPENDIX E

DEMOGRAPHIC QUESTIONNAIRE

Demographic Questionnaire

Participant Code ___ ___ ___ ___ ___

Please answer all of the following questions by circling the correct response or filling in the blank with your response.

1. Age_____
2. Race/Ethnicity
    a. Asian
    b. Native American or Alaskan Native
    c. Black, Non-Hispanic
    d. Hispanic
    e. Native Hawaiian or Other Pacific Islander
    f. White, Non-Hispanic
    g. Foreign/Non-Resident Alien
    h. Race/Ethnicity Unknown
    i. Two or more races
3. Sex/Gender
    a. Female
    b. Male
4. Marital Status
    a. Single (never married)
    b. Married
    c. Divorced
    d. Widowed
5. Class status:
    a. Freshman
    b. Sophomore
    c. Junior
    d. Senior
6. Is this your first enrollment in NURS 304 Health Deviations I
    a. Yes
    b. No
7. What is your current overall/cumulative Grade Point Average (GPA)? _____

APPENDIX F

HANDOFF CLINICAL EXAMINATION (CEX) INSTRUMENT

Handoff PROVIDER Evaluation Form

Evaluator: _____ Evaluatee: _____ Unit: _____ Date: _____

Evaluatee experience: ○ < 1 year ○ 1-2 years ○ 3-5 years ○ >5 years Situation: ○ end of shift ○ transfer between services ○ Admission

Setting (○ not observed)

≥ 5 interruptions; Noisy, chaotic	1	2	3	|	4	5	6	|	7	8	9	*No interruptions; silent*
	Unsatisfactory				Satisfactory				Superior			

Organization/efficiency (○ not observed)

Disorganized; Rambling	1	2	3	|	4	5	6	|	7	8	9	*Standardized sign-out; concise*
	Unsatisfactory				Satisfactory				Superior			

Communication skills (○ not observed)

Not face-to-face; Understanding not confirmed; No time for questions; Responsibility for tasks unclear; Vague language	1	2	3	|	4	5	6	|	7	8	9	*Face-to-face sign-out; Confirms understanding; Elicits questions; Assigns responsibility for tasks; Concrete language*
	Unsatisfactory				Satisfactory				Superior			

Content (○ not observed)

Information omitted or irrelevant; Omits clinical condition; 'to dos' lack plan, rationale	1	2	3	|	4	5	6	|	7	8	9	*Includes all essential information describes clinical condition 'to dos' have plan, rationale*
	Unsatisfactory				Satisfactory				Superior			

Clinical judgment (○ not observed)

No recognition of sick patients; No anticipatory guidance	1	2	3	|	4	5	6	|	7	8	9	*Sick patients identified; Anticipatory guidance provided with plan of action*
	Unsatisfactory				Satisfactory				Superior			

Humanistic qualities/professionalism (○ not observed)

Hurried, inattentive Inappropriate comments re: pts, family, staff	1	2	3	|	4	5	6	|	7	8	9	*Focused on task appropriate comments re: patients, family, staff*
	Unsatisfactory				Satisfactory				Superior			

Overall sign-out competence (○ not observed)

	1	2	3	|	4	5	6	|	7	8	9	
	Unsatisfactory				Satisfactory				Superior			

Evaluation time: Observing: _____min Providing feedback: _____min

Evaluator satisfaction with evaluation:

Low	1	2	3	|	4	5	6	|	7	8	9	High

Evaluatee satisfaction with evaluation:

Low	1	2	3	|	4	5	6	|	7	8	9	High

Comments: _____

Handoff RECIPIENT Evaluation Form

Evaluator: _____ Evaluatee: _____ Unit: _____ Date: _____

Evaluatee experience: ○ < 1 year ○ 1-2 years ○ 3-5 years ○ >5 years Situation: ○ end of shift ○ transfer between services ○ Admission

Setting (○ not observed)

≥ 5 interruptions; Noisy, chaotic	1	2	3	|	4	5	6	|	7	8	9	*No interruptions; Silent*
	Unsatisfactory				Satisfactory				Superior			

Organization/efficiency (○ not observed)

Disorganized; Ill-prepared	1	2	3	|	4	5	6	|	7	8	9	*Prepared for note-taking; takes notes*
	Unsatisfactory				Satisfactory				Superior			

Communication skills (○ not observed)

No interaction; No questioning; No read-back; No acceptance of responsibility for tasks; Vague language	1	2	3	|	4	5	6	|	7	8	9	*Face-to-face sign-out; Asks questions; Read-back of assigned tasks; Accepts responsibility; Concrete language*
	Unsatisfactory				Satisfactory				Superior			

Clinical judgment (○ not observed)

No recognition of sick patients; No request for anticipatory guidance	1	2	3	|	4	5	6	|	7	8	9	*Sick patients recognized; Anticipatory guidance requested*
	Unsatisfactory				Satisfactory				Superior			

Humanistic qualities/professionalism (○ not observed)

Hurried, inattentive Inappropriate Comments re: pts, family, staff	1	2	3	|	4	5	6	|	7	8	9	*Focused on task; appropriate comments re: patients, family, staff*
	Unsatisfactory				Satisfactory				Superior			

Overall sign-out competence (○ not observed)

	1	2	3	|	4	5	6	|	7	8	9	
	Unsatisfactory				Satisfactory				Superior			

Evaluation time: Observing: _____min Providing feedback: _____min

Evaluator satisfaction with evaluation:

Low	1	2	3	|	4	5	6	|	7	8	9	High

Evaluatee satisfaction with evaluation:

Low	1	2	3	|	4	5	6	|	7	8	9	High

Comments: _____

APPENDIX G

WRITTEN PERMISSION TO USE INSTRUMENTS

Process to Request Permission to Use Handoff-CEX instrument(3)
People
shelley upshaw <shelley_upshaw@yahoo.com>
To
leora.horwitz@yale.edu
Feb 4 at 11:26 PM

Dr. Horwitz,

I am faculty and doctoral student here at Southern University and A&M College - School of Nursing, writing my draft proposal entitled, *Unfolding Case Study: An effective strategy to enhance critical thinking, knowledge acquisition, and handoff communication skill performance in second semester sophomore baccalaureate nursing students, u*nder the direction of my dissertation committee chaired by Dr. Jacqueline J. Hill.

Please advise on the process to secure permission to use the Handoff CEX evaluation tool in my research study.

Sincerely,
Antionella "Shelley" Upshaw, MSN, RN
Assistant Professor of Nursing
Southern University and A&M College
School of Nursing
P.O. Box 11794
Baton Rouge, LA 70813
office (225) 771-3403 or (225) 771-2653 fax (225) 771-2651
email: shelley_upshaw@yahoo.com or antionella_upshaw@subr.edu
NLN Jonas Scholar

Horwitz, Leora <leora.horwitz@yale.edu>
To
shelley upshaw varora@medicine.bsd.uchicago.edu Jeanne Farnan
Feb 5 at 5:08 AM
Permission granted! Please let us know how it turns out.

Sent from my iPad.

Throckmorton, Terry (ELS-HOU) <t.throckmorton@elsevier.com>
To
shelley upshaw
Mar 29 at 2:08 PM
Shelly, I reviewed your protocol, and it is well written. I will be in my office until about 6 PM. Tomorrow is fairly busy, but Thursday and Friday are open. You can call me at 713-346-6927. I am attaching a contract for you to sign. We suggest using two parallel forms tests for your pre- and post-tests. As you noted, they are typically 30 items. They will be provided to you as a grant from Elsevier. It takes 8-10 weeks to process them. Does your institution use the HESI tests? I look forward to hearing from you. Terry

Terry Throckmorton, PhD, RN • Principal Researcher • Education • Office: **800.950.2728, ext. 6927** • Fax: **713.346.6970** •t.throckmorton@elsevier.com

HSRT application approved
Chris Smitt <csmitt@insightassessment.com>
To
shelley_upshaw@yahoo.com
Feb 12 at 3:52 PM
Hello Anionella,

Congratulations on being approved for a special discounted price on tests and testing services for the purpose of gathering data for your doctoral dissertation. Let me know the number of HSRT assessments that you need, and I can put together a complimentary price quote. How will you be administering the assessment? If you have any questions feel free to contact me.
Best Wishes,

Chris Smitt
Customer Relations Specialist
Insight Assessment
650-697-5628
www.insightassessment.com
csmitt@insightassessment.com
Measuring Thinking Worldwide

APPENDIX H

EXPERIMENTAL CONDITION

NLN ACE.S UNFOLDING CASE STUDY SCENARIO

Simulation Design Template:
Henry Williams-Simulation

Date:
Discipline: Nursing
Expected Simulation Run Time: 20 minutes
Location: Rehabilitation Center

File Name: Henry Williams
Student Level: First Semester Junior
Guided Reflection Time: 20 minutes
Location for Reflection: Lab/Classroom

Admission Date: | **Today's Date:**

Brief Description of Client

Name: Henry Williams

Gender: M **Age**: 69 **Race**: Black **Weight**: 88 kg **Height**: 72 in

Religion: Baptist

Major Support: Ertha (wife) **Support Phone:** 320-222-2345
Betty (daughter-in-law) 320-222-1111

Allergies: Penicillin **Immunizations:** Up to date

Attending Physician/Team: Dr. Nelson

Past Medical History: Chronic obstructive pulmonary disease (COPD), cardiovascular disease (CVD), asthma, hearing loss (wears hearing aids)

History of Present Illness: COPD - Henry has spent 15 days in the rehabilitation facility having therapy and education for managing his COPD and increasing his activity tolerance. He has improved greatly and uses his oxygen at night and only as needed. He has not been able to show us that he knows how to do his breathing treatments and manage his medications. Now he and his wife Ertha are hoping to transition to an assisted living facility after he is discharged from the rehabilitation center.

The scenario to follow will include how Henry and Ertha and the family have been dealing with the changing health and living situations. This scenario is designed to be a handoff communication situation with a nurse from the hospital giving a communication report to the nurse at OLOL Rehabilitation Center.

Social History: Retired

Primary Medical Diagnosis: COPD, cardiovascular disease

Surgeries/Procedures & Dates: Appendectomy at age 15.

Nursing Diagnoses: Alteration in respiratory status secondary to exacerbation of COPD

Psychomotor Skills Required Prior to Simulation

- Geriatric assessment skills with focused assessment for transfer to a rehabilitation center.

Cognitive Activities Required Prior to Simulation

[i.e. independent reading (R), video review (V), computer simulations (CS), lecture (L)]

- ISBAR standardized communication tool. (R)
- Basic knowledge of geriatric syndromes and the atypical presentation of older adults. (L, R)
- PPT on The Care Management of COPD & Pneumonia Patient
- Independent reading as assigned by faculty. (R)
    - Lewis required textbook- Chapter 20 Nursing Management: Obstructive Pulmonary Diseases, pages 560-601
    - "Effective Handoff Communication" Wheeler, K. (2015) article
    - video on successful handoff communication/not successful handoff communication
    - https://youtu.be/_H0tT3p7RlU or https://youtu.be/PIlzIvXpSDY
    - the wrong way to conduct shift report https://youtu.be/xy0m9oMq7oc

Simulation Learning Objectives

General Objectives

1. Practice standard precautions throughout the exam.
2. Employ effective strategies to reduce the risk of harm to the client.
3. Assume the role of team leader or member.
4. Perform a focused physical assessment noting abnormal findings.
5. Recognize changes in patient symptoms and/or signs of patient compromise.
6. Perform priority nursing actions based on clinical data.
7. Reassess/monitor patient status following nursing interventions.
8. Perform within the scope of practice.
9. Demonstrate knowledge of legal and ethical obligations.
10. Communicate with a client in a manner that illustrates caring for his/her overall well-being.
11. Communicate appropriately with physician and/or other healthcare team members in a timely, organized, patient-specific manner.

Simulation Scenario Objectives

1. Assess patient readiness to be discharged to a rehabilitation center.
2. Assess patient understanding of his medications and his ability maintain compliance.
3. Review the plan of care in collaboration with the client, family and interdisciplinary team.
4. Demonstrate effective teaching and communication with the client and family
5. Use the SBAR standardized tool to communicate with other health care professionals during transfer to assisted living nurse/home care agency.

Supplemental References, Evidence-Based Practice Guidelines, Protocols, or Algorithms Used for This Scenario:

These and other tools in the *Try This:* ® and *How toTry This* Series are available on the ConsultGeriRN.org (http://consultgerirn.org/resources), the website of the Hartford Institute for Geriatric Nursing, at New York University's College of Nursing. The tool, an article about using the tool, and a video illustrating the use of the tool are all available for your use.

Hartford Institute for Geriatric Nursing. Assisted Living/Nursing Home/Long-term Care. Retrieved from: http://consultgerirn.org/resources/assisted_living_nursing_home_long_term_care/

Hartford Institute for Geriatric Nursing. ***Assessing Family Preferences for Participation in Care in Hospitalized OlderAdults*****:** Retrieved from http://consultgerirn.org/uploads/File/trythis/try_this_22.pdf

Review the Essential Nursing Actions in the ACES Framework at:http://www.nln.org/professional-development-programs/teaching-resources/aging/ace-s/nln-aces-framework

Fidelity (choose all that apply to this simulation)

Setting/Environment:
- ☐ ER
- ☐ Med-Surg
- ☐ Peds
- ☐ ICU
- ☐ Alternatively, / PACU
- ☐ Women's Center
- ☐ Behavioral Health
- ☐ Home Health
- ☐ Pre-Hospital
- ☒ Other: Discharge today to assisted living

Simulator Manikin/s Needed:
Vital Sim, SimMan® or standardized patient

Props: Glasses, hat, hearing aids. Henry is dressed for transfer and sitting in a chair in his room, waiting to go to the rehabilitation facility.

Equipment Attached to Manikin:
- ☐ IV tubing with primary line lactated ringer's fluids running at mL/hr
- ☐ Secondary IV line running at mL/hr
- ☐ IV pump
- ☐ Foley catheter mL output
- ☐ PCA pump running
- ☐ IVPB with running at mL/hr
- ☐ 02
- ☐ Monitor attached
- ☒ ID band Henry Williams
- ☐ Other:

Equipment Available in Room:

Medications and Fluids:
- ☐ IV Fluids:
- ☒ Oral Meds: see chart
- ☐ IVPB:
- ☐ IV Push:
- ☐ IM or SC:

Diagnostics Available:
- ☐ Labs
- ☐ X-rays (Images)
- ☐ 12-Lead EKG
- ☐ Other:

Documentation Forms:
- ☒ Physician Orders
- ☐ Admit Orders
- ☐ Flow sheet
- ☐ Medication Administration Record
- ☒ Kardex
- ☐ Graphic Record
- ☐ Shift Assessment
- ☐ Triage Forms
- ☐ Code Record
- ☐ Anesthesia / PACU Record
- ☐ Standing (Protocol) Orders
- ☐ Transfer Orders
- ☒ Other: Discharge Record and Medication Record for discharge

Recommended Mode for Simulation:
(i.e. manual, programmed, etc.) either

☐ Bedpan/Urinal ☐ Foley kit ☐ Straight Catheter Kit ☐ Incentive Spirometer ☐ Fluids ☐ IV start kit ☐ IV tubing ☐ IVPB Tubing ☐ IV Pump ☐ Feeding Pump ☐ Pressure Bag ☐ 02 delivery device (type) ☐ Defibrillator/Pacer ☐ Suction ☐ Other:	**Student Information Needed Prior to Scenario:** ☒ Has been oriented to simulator ☒ Understands guidelines /expectations for scenario ☒ Has accomplished all pre-simulation requirements ☐ All participants understand their assigned roles ☐ Has been given time frame expectations ☐ Other:
Roles/Guidelines for Roles: ☒ Primary Nurse ☒ Secondary Nurse ☐ Clinical Instructor ☒ Family Member #1 ☒ Family Member #2 ☐ Observer/s ☐ Recorder ☐ Physician/Advanced Practice Nurse ☐ Respiratory Therapy ☐ Anesthesia ☐ Pharmacy ☐ Lab ☐ Imaging ☒ Social Services ☐ Clergy ☐ Unlicensed Assistive Personnel ☐ Code Team ☐ Other:	**Important Information Related to Roles:** Prepare students to take on roles of RNs in the rehabilitation. Preparation should involve research of the local county and community resources for geriatric clients, what services are provided in the rehabilitation facility, is available for Henry, costs of elderly services, and what is covered by insurance. One student should play the role of handoff provider and one, the handoff receiver. The student should be aware of the perspective of the family members during this transition and respect decisions of the client and family.

Report Students Will Receive Before Simulation

Time:

Henry is in his room, in a chair, dressed and ready to transfer to the rehabilitation center. Betty and Ertha will be here today at 1:00 to help facilitate the transfer to his new room in

the facility. There are forms for the transfer and please make sure Henry can review his medications correctly. He should be able to take them with some assistance. I have given him his AM medications. He is aware that a home care RN can come in and set up his pills, but he has not decided if he wants that help or not. Henry has talked about his wife being "forgetful" and seemed to worry about her a lot. When his daughter-in-law, Betty gets here, she may need to help to decide on the services Henry and Ertha will need to be successful in the rehabilitation facility.

Diagnostic Studies:	refer to the chart
Last PFT: decreased FEV, (48%) and FEV1/FVC (62%)	
ABGs on admission: pH 7.34, PaCO2 49 mm Hg, HCO2 27 mEq/L, PaOs 70 mm Hg	
WBC: 14,000/ml on admission	
Chest x-ray: hyperinflation, flat diaphragm, no sign of pneumonia	
Physician Orders:	refer to the chart
Home Medications:	refer to the chart

Scenario Progression Outline

Timing (approx.)	**Nurse Actions**	**Expected Interventions**	**May Use the Following Cues**
0-5 min	Henry is sitting in the chair. He is asking questions about going to the rehabilitation center. "Ertha will be fine with me… He is talking to Betty and getting a little anxious that he will be separated from Eartha once again… "Why are you so upset?"	• Introduce self to patient and family members • Wash hands • Let patient know the plan for transfer • Perform focused assessment for transfer to a rehabilitation center. • Nurse will prepare the family for transfer. Asks questions to	**Instructor providing cue:** Cue:" Henry, you will be transferring to OLOL Rehabilitation Center is the next couple of hour? Let me tell you what to expect...

		• determine if the transfer is appropriate.	she will be with Henry."
5-10 min	”You are about to call OLOL Rehabilitation Center to give a report to the nurse and the unit clerk pages you to Henry’s room,…he is verbalizing …he is having shortness of breath only when ambulating. He is worried about getting pneumonia in the rehabilitation center because it has happened before.“	• Nurses should notice Henry’s difficulty and anxious behavior. They should follow up with questions about the appropriateness of discharge.	**Instructor providing cue:** Cue: Is Henry ready to be transferred?
5-10 min	You assess Henry’s lung sounds, and you note crackles in the left lower bases, barrel-shaped chest, slight use of accessory muscles when breathing, no edema noted? His vital signs are as follow: blood pressure 136/76; pulse 86 bpm, respirations 28 shallow, temperature 99 orally, oxygen saturation 88%	• Assess Henry’s lung sounds • Nurse should evaluate Henry and his ability to take his medications on his own. • The nurse should ask if he would be more confident if we discussed PM medications and services of the rehabilitation center.	**Instructor providing cue:** Cue: Should you contact the physician? What are classical manifestations of an exacerbation of COPD? What is the COPD Management Plan? Purse-lip breathing, place O2, any medications?

		• Does Henry need to be referred to his PCP • Students should explore resources including adult day care centers and respite care for Eartha if Betty not able to assist with wife.	
15-20 min	"Henry is now stable and believes it is the best thing for him to go to the rehabilitation center, where he can be monitored and allowed to practice how to take medications" Note Diagnostics on Chart	• • The nurse needs to be prepared to give report with ISBAR communication tool, chart with all pertinent information, etc.	**Instructor providing cue:** Cue: How will you give report? What items do you need to effectively communication information? Interpret ABGs upon admission?

Debriefing/Guided Reflection Questions for This Simulation

(Remember to identify important concepts or curricular threads that are specific to your program)

1. How did you feel throughout the simulation experience?
2. Describe the objectives you were able to achieve.
3. Which ones were you unable to achieve (if any)?
4. Did you have the knowledge and skills to meet objectives?
5. Were you satisfied with your ability to work through the simulation?
6. What communication practices minimize risks with hand-offs communication among health care providers across the continuum of care

Develop a standardized form or tool to hand-off or report patient information using the I-SBAR form. Provide information that is relevant and timely. Use appropriate tone, volume and speak clearly. Identify the sender and the receiver of the information. Allow time to ask questions.

7. Knowing necessary information needed for a safe hand-off report, what information was missing that needed to be communicated to the oncoming nurse? What other information might the nurse include

   Allergy status, abnormal laboratory values, the medications the patient refused. Whether the health care provider was notified of elevated blood pressure, I&O's, lung sounds and concerns of developing pneumonia.

8. How does I-SBAR report support national patient safety resources, initiatives or regulations?

   I-SBAR reporting supports National Patient Safety Goal #2 to improve the effectiveness of communication among caregivers. It is a standard means of communicating that can be used to report patient's status, include a change of condition, shift report, and "hand-off" communication from one department or facility to another.
9. To Observer: Could the nurses have handled any aspects of the simulation differently?

10. If you were able to do this again, how could you have handled the situation differently?

11. What did the group do well?

12. What did the team feel was the primary nursing diagnosis?

13. What were the key assessments and interventions?

14. How were you able to use the ISBAR Framework with Henry's situation to give a handoff report and receive a handoff report?

15. What are the risks and benefits regarding the transfer to the assisted living facility?

16. Is there anything else you would like to discuss?

Complexity Simple to Complex

Suggestions for Changing the Complexity of This Scenario to Adapt to Different Levels of Learners

1. Transfer could be delayed or complicated with Henry's level of anxiety or change in health status ongoing. Henry could show a significant increase in the level of anxiety or a decrease in his functional status such as grooming or other self-care activities.

APPENDIX I

FACULTY TRAINING SESSION

Training Session for Clinical Faculty

Session One

1) Faculty members were provided a detailed plan for the research study.
    - The plan included study purpose, research design, sample, and setting.
2) Orientation to the Pre-simulation activities
    - Each faculty member received a 3-page article on Best Practices of Effective Handoff Communication and ISBAR organizing data from
    - Verbal and written instructions on how to discuss.
3) Orientation to the Handoff CEX.
    - The six domains: setting, organization, communication, clinical judgment, professionalism, and overall competency will be defined, reviewed, and discussed.
    - Verbal and written Instructions on how to score will be provided.
4) Orientation to the HESI Custom Exam.
    - Verbal and written instructions on how to administer tests and how to discuss test scores and results with test takers.
5) Orientation to the HSRT.
    - Five domains: analysis, inference, evaluation, induction, and deduction will be defined, reviewed and discussed.
    - Instructions on how to discuss results with the test-taker

Session Two

1) The UCS teaching experience was reviewed (thoroughly discussed in detail time and additional human resources would take place for both student and instructor).
2) Clinical faculty received the NLN-ACE.S scripted simulation learning objectives and the simulation design template for the UCS learning experience and detailed information regarding the patient scenario
3) A mock simulation was conducted to include (pre-briefing, simulation guided activity, and debriefing/guided reflection.

- Advised students the UCS will take additional time and may feel overwhelmed
- Advised faculty the UCS will take additional time to plan and monitor

APPENDIX J

ISBAR ORGANIZING DATA FORM

Patient Handoff Guide

SBAR

Effective Handoff Communication Criteria:

- Ensure mutual agreement to transfer/hand off patient care
- Provide time to ask/answer questions
- Avoid interruptions & distractions during handoff
- View patient medical record during handoff (when possible)
- Exchange names, credentials & location(s)

(Away from unit <=30 minutes report *at least* "Situation" below)

S ITUATION

- ❑ Patient name
- ❑ Age
- ❑ Physician
- ❑ Diagnosis
- ❑ Surgery(s)
- ❑ IMMEDIATE CONCERNS/RISKS related to this patient *
- ❑ Anticipated changes in patient condition
- ❑ Any pending treatments or tests *

B ACKGROUND

- ❑ Brief pertinent medical history
- ❑ Code status
- ❑ Advance directive status
- ❑ Allergies (allergy band or NKA sticker on?)
- ❑ Mental health concerns (suicide risk?) *
- ❑ IVs/central lines
- ❑ Treatments
- ❑ Catheters-tubes-drains (labeled by type)
- ❑ Pending/CRITICAL tests/labs *
- ❑ Expected length of stay

A SSESSMENT

- ❑ Vital signs
- ❑ RESPIRATORY: O2 amount/mode (weaning process?)
- ❑ NEUROLOGICAL: (mental status, GCS, seizures)
- ❑ CIRCULATION
- ❑ SKIN: (incisions, wounds, injuries, skin care)
- ❑ GI/GU: (I/O, last BM, nutrition, weight)
- ❑ MUSCULOSKELETAL
- ❑ PSYCHOSOCIAL/communication: (suicide risk) *
- ❑ Pain level (where? new? best treatment?)
- ❑ Activity needs/mobility/FALL RISK *
- ❑ Infections/isolation status *

R ECOMMENDATION

- ❑ Cultural and communication needs
- ❑ Pending orders
- ❑ Immunizations
- ❑ Smoking cessation documented
- ❑ Age specific needs-thermoregulation, sensory
- ❑ Patient preferences/involvement in care *
- ❑ Goals for this patient *
- ❑ Medications (IV/oral) & Medication Transfer Form *

REPEAT BACK as appropriate
ASK QUESTIONS & *CLARIFY!*
* JCAHO National Patient Safety Goal

Safety Reminder

When do I use the SBAR Patient Handoff Guide?

What is the hand off guide?
An effective technique for communicating clinical information between care providers when handing off/transferring patient care to another caregiver. Also, used as a tool when contacting a physician regarding a patient's change in condition.

Who should use the guide?
All clinicians involved with patient care in the position of transferring or handing off patient care to another care giver at all levels. Report all information relative to your level of care and pertinent to this patient's condition.

When is a hand off guide used?
Shift changes, patient transfers to all units and different care locations, breaks, on-call transfers, and calling physician to report a change in patient condition.

Away from the unit for 30 minutes or less?
Report at least "Situation" & other pertinent information the short term care giver should know.

S: What is the Situation you are calling about?

- ➢ Identify yourself, the unit, and the patient
- ➢ Briefly state the situation, pertinent information or concern

B: Background information related to situation

- ➢ Condition, surgery, diagnosis related to the situation
- ➢ Allergies, code status, IVs, critical tests, clinical info.

A: What is your Assessment of the situation? Anticipated needs for this patient.

R: What is your Recommendation on what you would like to see done or should be done further for this patient?

Do I Need to Report All of This Information?
Use your clinical judgment and report patient information that the receiving clinician needs to know. Be prepared to answer questions and clarify! Use this as a guide to facilitate effective communication.

I-SBAR FORM

Patient Initial: **Room Number:**

I

S

B

A

R

R

I-SBAR FORM/ANSWER KEY

Patient Initial: HW Room Number: 201

I Introduction of self and receiver

Good morning/Good afternoon. My name is _____I am the nurse that will be leading the transfer from the hospital to the rehabilitation center.

S **(Situation)**

Patient's diagnosis: "The patient was diagnosed with or has history of COPD, CVD, asthma, hearing loss (wears hearing aids)

Patient's complaints/needs: The patient has been complaining/verbalizing shortness of breath only when ambulating. The patient is on oxygen at night and prn at this time. Patient has not been able to demonstrate/show he uses breathing treatments when needed and is not managing his medications. At the time of discharge, patient assessment revealed lung sounds fine crackles, left lower lobe, use of accessory muscles, VS: 136/76, 86, 28 shallow, 99 temp, O2 sats 88%. I notified the physician, received orders for a chest x-ray, continue meds, educated patient. Patient is anxious about leaving wife but knows is ready for a rehabilitation center.

B **(Background)**
History/Reason for Admission: "The patient came in through the ER on complaining/verbalizing of ."
Vital Signs/O2 Sat: " Vital signs are as follow:
Mental Status (Alert/Oriented): The patient is A&O x 3
Code Status: The patient's code status is "full code."
Allergy: Penicillin, immunizations are current
Abnormal Labs: Diagnostic Studies: ON ADMISSION
Last PFT: decreased FEV, (48%) and FEV1/FVC (62%)
ABGs on admission: pH 7.34, PaCO2 49 mm Hg, HCO2 27 mEq/L, PaOs 70 mm Hg
WBC: 14,000/ml on admission
Chest x-ray: hyperinflation, flat diaphragm, no sign of pneumonia
Medication (pertinent issues/effectiveness): The patient has refused am medications, stating he wants to wait until he speaks to the physician
IV: HepLock

A **(Assessment)**
Concerns for patient/Assessment of situation: " I think the patient may be experiencing some anxiety about moving to a rehabilitation center and life changes. Wife will be with daughter until he is discharged.

R (**Recommendation)** for care: "I think the patient might need a chest x-ray."

Pending treatment/test: We are waiting on the laboratory to draw the patient's routine morning labs."
Read back, Questions, Feedback: "Do you have any questions for me?"

VITA

Name: Antionella "Shelley" Upshaw

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School of Nursing
P.O. Box 11784
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Telecommunications:
Email: antionella_upshaw@subr.edu or
shelley_upshaw@yahoo.com

Licensure: Registered Nurse Louisiana State Board of Nursing

Certifications: Basic Life Support American Heart Association
Nurse Aide Competency and Evaluation

EDUCATION

Year	School	Degree	Major
2014	Southern University and A&M College	PhD	Nursing
2005	Southern University and A&M College	MSN	Nursing
2001	Southern University and A&M College	BSN	Nursing
1986	McNeese State University	BS	Finance & Eco

WORK EXPERIENCE

Southern University and A&M College August 2005 - present
Baton Rouge General Medical Center October 2003 2009
St. Joseph Hospice October 2005 2009
Our Lady of the Lake RMC June 2001 October 2005

Teaching Experience and Academic Administration Experience

Institution Location	Position	Subject
Southern University and A&M College Spr 2012- present	Asst Prof	Community Health
Southern University and A&M College Fall 2006 Spr 2012	Asst Prof	Nursing Process II
Southern University and A&M College Fall 2007-Fall 2011	Asst Prof	HLSC 120
Southern University and A&M College Fall 2006	Asst Prof	Pharmacology
Delta College of the Arts Spr 2011 present	Part-time Instructor	LPN

SCHOLARSHIP

Publications: In process of reviewing literature for preparation of manuscript publication.

SCHOLARLY PRESENTATIONS

National/State Wide

Date	Topic
Oct 2014	*Ebola a death sentence?* Infectious Disease Panel Discussion Dianne Andrews In Black & White Show
July 2009	*The Patient-Centered Medical Home Model A Policy Brief* Louisiana State University Health Sciences Center
May 2005	*Nursing's Presence and Role in REACH 2010 Projects Designed to Reduce Health Disparities* A Clinical Research Project,Southern University and A&M College

ATTENDANCE AT CONFERENCES/WEBINARS/PROFESSIONAL MEETINGS

Kaplan "Inside the NCLEX: Getting Into the Nitty Gritty" February 2017
ANA "How to Expertly Manage Students with Unsafe Behaviors in the Clinical Setting" December 2016
Southern University Open Textbook Week - "Leveraging the SUS Digital Library Webinar 1" November 2016
ANA How to Effectively Teach Ethics to Nursing Students Webinar October 2016
ANA "Care Coordination: Capitalizing on the Nursing Role in Population Health" September 2016
National League for Nursing (NLN) Education Summit/JONAS SCHOLAR September 2015
Quality Matters "Independent Applying the QM Rubric (APPQMR) October 2014
Remediation & Testing Focused Program Take a Case Study Approach December 2014 webinar/Evolve Elsevier
EHR Tips and Tools December 2014 webinar/Evolve Elsevier
Navigating the Changing Economic Environment for Nurses November 2013 webinar
Louisiana Association of Private Colleges and Schools (LAPCS) Annual Conference "Investing in Student Success" May 2014
Dare to Care "Sexual Assault Awareness and Support: A Collaborative Management Approach Woman's Hospital November 2013
Southern Nursing Research Society "Nurse Scientists as Crucial Partners to Health Delivery" Annual Conference - February 2012
Train-The-Trainer Workshop "Nurse Aide Training and Competency" June 2011 (LA Department of Health and Hospitals Bureau of Health Standards)
Southern Nursing Research Society "Excellence in Nursing Research: Celebrating 25 Years"-Annual Conference- February 2011
Critical Thinking and Test Construction Workshop March 2010
Merit Software Training Developing Critical Thinking Skills and Essay Punch February 2010
Pioneer Network Culture Change, "Coming Together, Creating Community, It's Only Natural" August 2009
Omaha System: A Key to Practice, Documentation, and Information Management February 2009
Simulation (SimMan) Users' Group Conference by Laerdal January 2008
ERI NCLEX Test Item Writing Spring 2007
Spinal Cord Anatomy, Injury, & Function Traumatic Brain Injury June 2007
Geriatric Nursing Education Consortium (GNEC) Faculty Development Institute October 2007

PROFESSIONAL MEMBERSHIPS/ORGANIZATIONS

National League for Nursing - Jonas Scholars
Baton Rouge District Nurses Association (Public Policy Board Member) January 2015 - present
Community Development Institute Iberville Parish Health Advisory Board Member October 2013-present
Southern Nursing Research Society (SNRS) January 2010 present
National Council on Aging February (NCOA) 2010 - present
Pioneer Network Culture Change May 2009 - present
Sigma Theta Tau International Nursing Honor Society May 2005 present
Alpha Kappa Alpha Sorority (AKA), Inc., Fall 1984 present
Hospice and Palliative Nursing Association (HPNA) Fall 2007 present
Louisiana State Nurses Association (LSNA) Fall 2009 present
Baton Rouge District Nurse Association Fall 2009 - present
American Nurses Association (ANA) Fall 2009 - present

PROFESSIONAL ACTIVITIES

Louisiana Board of Regents Nursing Fellowship Recipient August 2003
BRDNA - Edith Lobue Scholarship recipient Spring 2011

Southern University and A&M College System
Academic Affairs Grievance Committee January 2017 - present

Southern University School of Nursing
CCNE Evidence of Baccalaureate Essentials Spring 2011 - 2013
Curriculum Committee Fall 2006 Spring 2009
Admission and Progression Fall 2007 present
SUSON Grievance Committee Fall 2006 present

Sigma Theta Tau International Nursing Honor Society, Tau Pi Undergraduate Counselor August 2009 2011
Jonas Scholars Cohort IV Recipient Fall 2015 present

COMMUNITY SERVICE

Audubon Girl Scout Council past volunteer Speaker
Annual Health Fair St. Paul Catholic Church
The American Legion Unit 387, District 8
Baton Rouge Center for Visual and Performing Arts past PTO secretary
McKinley Middle Magnet Program past Parent Group