Improving Baccalaureate Nursing Students' Critical Thinking Ability through the Initiation of Patient Safety Simulations

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Signature Page

This capstone project, Improving Baccalaureate Nursing Students' Critical Thinking Ability through the Initiation of Patient Safety Simulations, was prepared under the direction of the faculty mentor and practice partner. It is accepted by the faculty mentor, practice partner, and Director of the program in partial fulfillment of the requirements for the degree of Doctor of Nursing Practice at the University of Southern Indiana.

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Dedication and Acknowledgment

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Executive Summary

Problem: The priority for healthcare is patient safety. Within the acute care setting, registered nurses are patient advocates, overseeing, coordinating, and providing patient care while assuring patient safety. As the need for registered nurses increases due to retirement of current RNs, increasing patient acuity, and technological advances, graduate nurses must enter the workforce with a high level of critical thinking skills concerning delivering appropriate patient care and ensuring patient safety. Graduate nurses, however, may not transfer theoretical knowledge to practice. The inability to transfer knowledge to practice can endanger the patient.

Purpose: The purpose of the capstone project was to increase the critical thinking ability of nursing students in recognizing and preventing patient safety issues. Increasing the ability to transfer theoretical knowledge to practice will decrease patient injury and death in the acute care setting as nursing students graduate and enter the workplace.

Plan: Patient safety simulations were threaded throughout the curriculum in each level of the baccalaureate nursing program (sophomore, junior, and senior). Improvement in critical thinking ability among baccalaureate nursing students was assessed through the use of Quality and Safety Education for Nurses (QSEN) patient safety sub-scores included in standardized Health Education Systems, Inc., (Evolve HESI) exams.

Results: Students in the sophomore and senior nursing cohorts showed a significant increase ($p<0.00001$) in critical thinking ability on Evolve HESI exams after participating in a patient safety simulation than did cohorts in which there was not a patient safety simulation. Junior students did not show a significant increase in the same category ($p<.0.5229$). Students in all cohorts believed that they benefitted from patient safety simulations.

Recommendations: There are two major recommendations derived from the capstone project. First, patient safety simulations threaded across the curriculum meets student needs in assessing, planning, implementing, and evaluating patient care and therefore increases critical thinking. Secondly, more research is needed to understand how to meet the educational and learning needs of all students regarding both critical thinking and patient safety.

Patient safety is the priority objective within the healthcare system (Harjai & Tiwari, 2009; Robert & Petersen, 2013; Robson, Clark, Pinnock, White, & Baxendale, 2013; Vaismoradi, Salsali, & Marck, 2011). The Institute of Medicine (IOM) has estimated that more than 98,000 people die from medical mistakes every year, with an additional one million patients suffering injures (Fero, Witsberger, Wesmiller, Zullo, & Hoffman, 2008, p. 140). In the hospital setting, registered nurses (RNs) are in close daily contact with patients at the bedside, playing a crucial role in identifying deteriorating patients or non-safe patient situations (Henneman et al., 2010; Vaismoradi et al., 2011). Nurses oversee, coordinate, and provide direct patient care, becoming a barrier between the patient and potential safety hazards in the health care system (Despins, Scott-Crawford, & Rouder, 2010; Frith, Anderson, Tseng, & Fong, 2012; Vaismoradi et al., 2011).

The healthcare industry has estimated that 30,000 RN graduates are necessary yearly to meet healthcare needs (The American Association of Colleges of Nursing [AACN], 2011). Patient acuity and complexity is expected to increase due to: (a) the aging of the large baby boomer population who will demand increasing healthcare services as they live longer and lead lives that are more active; (b) an increased emphasis on preventative care; and (c) technological advances in diagnosing and treating illness. As experienced nurses retire and the complexity and acuity of patient care increases, inexperienced graduate nurses will be required to demonstrate critical thinking by quickly processing information and making decisions regarding patient care and safety (Dyess & Sherman, 2009; Gillespie & Paterson, 2009).

The critical thinking ability of nurses directly affects patient safety (Fero et al., 2008). Critical thinking is a cornerstone of nursing practice and is an essential core competency for nurses in the 21st century (AACN, 2011). The most commonly referenced definition of critical

thinking in the nursing literature is from the Delphi Project of the American Philosophical Association (APA) (Sullivan, 2012; Turner, 2009). The APA defines critical thinking as a "purposeful, self-regulatory judgment which results in interpretation, analysis, evaluation, and inference" (Facione & Facione, 2008, p. 1).

Critical thinking is of vital importance to learning and cognitive development (Weiler, 2005). However, a gap exists between knowledge acquired in an educational, didactic program and critical thinking skills needed in practice by the graduate nurse. The practice gap can affect patient safety due to the difficulty the graduate nurse may encounter toward the application of theoretical principles to actual practice situations (Fero et al., 2008; Gillespie & Paterson, 2009; Jewell, 2013; Shinnick & Woo, 2012). A sentinel event, or an event that results in an unexpected death or serious injury within a health care setting, occur within acute care settings where graduate nurses commonly begin their professional practice (Fero et al., 2008, p. 140). Although reporting sentinel events is voluntary, the Joint Commission states that reported sentinel events indicate that 70% of incidents result in a patient's death (JC, 2013).

Although the importance of critical thinking in the prevention of patient injury has been well documented (DeBourgh & Prion, 2011; Del Bueno, 2005; Endacott et al., 2010; Saintsing, Gibson, & Pennington, 2011), nursing students may not develop critical thinking skills or may not understand how to apply critical thinking to patient situations. Student nurses in a clinical experience deliver patient care under the close supervision of the clinical instructor and therefore may have limited exposure to situations that may negatively affect patient safety. Preparing students to manage patient care and safety in situations that the student may not have encountered is often challenging to nurse educators (Jenkins, Blake, Brandy-Webb, & Ashe, 2011). As the healthcare environment increasingly uses advanced technological diagnostic

testing and treatment protocols, patient acuities rise, and an increasing number of graduate nurses are needed to meet healthcare demands, traditional methods of teaching (lecture, discussion, skill laboratories) may not be effective in meeting the needs of nursing students (Waxman, 2010). Research shows, however, simulation has been effective in teaching critical thinking skills resulting in an increase in patient safety (Broussard, 2008; DeBourgh & Prion, 2011; Ricketts, 2010).

The National Council of State Boards of Nursing (NCSBN) defines simulation as an "activity or event replicating clinical practice" (http://www.ncsbn.org). Educators have increasingly used simulation including case studies, concept mapping, human patient simulators, and problem based learning in prelicensure nursing programs. Simulation in undergraduate programs is used to introduce students to nursing skills, as an introduction to situations that are not frequently experienced during clinical rotations, and to increase critical thinking ability (Bambini, Washburn, & Perkins, 2009; Chunta & Katrancha, 2010; DeBourgh & Prion, 2011; Fero et al., 2010; Gillespie & Paterson, 2009; McCaughey & Traynor, 2010; Park et al., 2011; Popil, 2010; Su & Juestel, 2010). Simulation uses experiential learning in which the student actively takes part in the learning experience. According to Benner, Sutphen, Leonard, and Day (2010), "only experiential learning can yield the complex, open-ended, skilled knowledge required for learning to recognize the nature of the particular resources and constraints in equally open-ended and undetermined clinical situations" (p. 42).

One of the most often used simulation techniques employed in nursing education is the human patient simulator (HPS). The HPS is a highly technological manikin that talks, blinks, breaths, has bowel sounds, and heart sounds. The HPS aids in the development of critical thinking skills, clinical judgment, and communication skills in a stress free environment and

fosters confidence in dealing with real life experiences that may not have been encountered in the clinical setting (Akhu-Zaheya, Gharaibeh, & Alostaz, 2013; Brannan, White, & Bezanson, 2008; Broussard, 2008; Fero et al., 2010; Horan, 2009; Preston, Lopez, & Corbett, 2011). Jenkins et al. (2011) state that "because nurses need a strong foundation in patient safety, it is important to ensure that students have experiences that enable them to transfer concepts related to safety from the classroom to the practice setting" (p. 112). Human patient simulation experiences provide a dynamic approach to learning which in turn facilitates the transference of theoretical knowledge to real life situations (Broussard, 2008; Jenkins et al., 2011; Thompson & Bonnel, 2008).

The College of Health Professions at Northern Kentucky University (NKU) has made several curricular changes within the six semesters of the pre-licensure nursing program designed to increase the critical thinking skills of graduating students. Changes include: (a) the introduction of required clinical reasoning classes in the 3rd and 5th semesters, (b) use of the HESI (Health Education Systems, Inc.) specialty exams as a test grade in courses throughout the program, and (c) a benchmark score of 900 on the Exit HESI (E2) in order to graduate from the program. Changes in the curriculum were proposed in 2008, but not implemented until the fall 2010 semester. To foster development of critical thinking skills, simulation (HPS, case studies, concept mapping, and problem based learning) has been incorporated throughout the curriculum.

Purpose Statement

Although simulation has been introduced within the nursing program, no uniform system of including simulation scenarios reflecting patient safety issues has been established across the curriculum. The purpose of this capstone project was to improve critical thinking ability of baccalaureate nursing students through the introduction of leveled patient safety simulations

throughout the nursing program. Leveling simulations permits the student to participate at an appropriate level of skill and knowledge within the nursing program.

Theoretical Framework

The theory used for the capstone project is Kolb's experiential learning theory. David Kolb is an American educational theorist whose interest is in experiential learning. A professor emeritus of organizational behavior at Case Western Reserve University, Kolb is the founder and chairman of Evidence Based Learning Systems, Inc. (Smith, n.d.). He has based experiential learning theory (ELT) on the works of three earlier theorists- Dewey, Lewin, and Piaget-who believed that learning can occur only through reflection on experiences and meanings drawn from those experiences (Turesky & Gallagher, 2011).

John Dewey was a pragmatist who believed that what was learned through formal education could be made more practical with the use of experiential (or hands on) learning. According to Schellhase (2006), Dewey's model of learning "encompasses impulse, observation, knowledge, and judgment in a cyclical arrangement that perpetrates until all information is learned" (p. 19).

Kurt Lewin believed that tension was necessary within situations to facilitate learning. Lewin postulated that the discrepancy between what the learner observed and the reflection on that experience triggered a desire in the learner to understand the meaning of the experience. Within Lewin's model of action, research focused on the learner undergoing a concrete experience, reflecting, and endeavoring to understand that experience (Schellhase, 2006).

Jean Piaget theorized that learning comes from connections or experiences found within one's environment. Piaget did not address adults in his theory but limited his focus to developmental stages in children. He believed that a child would pass through four

developmental stages-sensorimotor, preoperational, concrete operational and formal operations (Bastable, 2013). These stages were not cyclical but were linear. Piaget's model is of particular importance in the process of learning and development of individual learning styles.

Concepts of Kolb's experiential learning theory are learning, stages of the learning cycle, apprehension, comprehension, and learning styles. Learning is defined as a continuous cycle in which knowledge is created by transforming concrete experience into existing cognitive frameworks that result in a change in the way the learner thinks and behaves (Lisko & O'Dell, 2010). The learning cycle is subdivided into four stages that the learner must pass through in order to accomplish learning. The stages are: a) concrete experiences that provide a basis for learning; b) reflective observation in which the learner looks at the concrete experience for meaning or perspective; c) abstract conceptualization in which the learner attempts to understand the experience; and d) active experimentation during which the learner tests new ideas and theories (Lisko & O'Dell, 2010; Sewchuk, 2005). The learner makes sense of the concrete experience through apprehension or comprehension. In apprehension the learner is taking part in the actual experience (i.e. simulation or a clinical rotation), whereas in comprehension, learning takes place away from the actual experience (i.e. lecture or textbook assignments) (Sewchuk, 2005). Although the person may enter the learning cycle at any point, the learner must experience all the stages of the learning cycle for learning to be effective (Lisko & O'Dell, 2010; Schellhase, 2006) (see Appendix B).

Kolb's experiential learning theory consists of four learning styles that describe different methods used by the learner to process and transform the experience into new thinking and behaviors. The learning styles are accommodating, diverging, converging, and assimilating.

> Accommodating learners learn through hands-on experiences and internalize knowledge through trial and error; diverging learners learn through experiences but internalize through reflection of the experience; converging learners learn through comprehension and internalize new knowledge through experimentation; and assimilating learners learn from comprehension but internalize through reflection (Sewchuk, 2005, p. 1312).

Experiential learning is a mid-range explanatory theory. According to Fawcett (2005), a mid-range theory is more concrete and narrower than a grand theory and is applicable to practice. Kolb's experiential learning theory has been applied to various disciplines including education, business, finance, and nursing (Lisko & O'Dell, 2010). Kolb's theory may also be described as an explanatory theory because of the use of two or more concepts that are interrelated, explaining the phenomenon of learning (Butts & Rich, 2011).

Assumptions of experiential learning theory applicable to critical thinking are:

1. Learning is best conceived as a process rather than outcomes.
2. Learning is continuous and based in experience.
3. Learning requires that stress that may be present during the experience should be resolved.
4. Learning is holistic.
5. Learning occurs through synergy of the learner and the environment.
6. Learning creates knowledge (Manolis, Burns, Assudani, & Chinta, 2012).

Critical thinking is a cyclical process that approaches a problem or situation holistically. Learners use knowledge from past experiences (patterns) to understand what is happening currently and make appropriate decisions. By assimilating patterns and current issues, a synergy occurs that allows the learner to decide upon a plan of action.

In order for the learner to be secure in decision making, critical thinking must be practiced (Sullivan, 2012). Experiential learning, or learning by doing, is known to improve critical thinking skills (Chunta & Katrancha, 2010; Gillespie & Paterson, 2009; Goodstone et al., 2013; Lampkin et al., 2010). However, nursing educators are often teaching content through the use of teacher oriented techniques (i.e. lecture) rather than learner oriented techniques (case studies, concept mapping, and simulation) (Robinson & Dearmon, 2013).

Nursing educators, however, teach the nursing process to nursing students as a framework for decision making. The nursing process is a "five step systematic method for giving patient care; it involves assessing, diagnosing, planning, implementation, and evaluating" (Taylor, Lillis, LeMone, & Lynn, 2011, p.14). By combining the nursing process with Kolb's experiential learning cycle, educators may be more comfortable with using techniques that will facilitate critical thinking. The nursing process is often described as being linear, but the elements of the process are cyclical with a constant evaluation and reevaluation of experiences (Burns et al., 2010). The continuity of the nursing process mirrors Kolb's experiential theory's learning cycle (see Appendix C).

Market/Risk Analysis

A SWOT (strength, weakness, opportunities, and threats) analysis is a strategic planning tool used by organizations to identify strengths, weaknesses, opportunities, and threats (Hillestad & Berkowitz, 2013). A SWOT analysis, a collection of qualitative data, was completed to determine the feasibility of including the capstone product into the existing curriculum. Strengths and weaknesses in a SWOT analysis are internal findings reflective of the capstone product's own capabilities (Hillestad & Berkowitz, 2013). Opportunities and threats reflect external influences that could affect the capstone product (Hillestad & Berkowitz, 2013).

Findings in the analysis were based on the personal opinions and observations of the project planner and mentor

Strengths to the implementation of the capstone project include increasing student nurses' critical thinking ability and support of the institution's mission and vision. Incorporation of the capstone project into the nursing curriculum presents opportunities to increase student retention by increasing student success in the nursing program and to increase positive employer satisfaction surveys. Weaknesses include increased time demands and financial concerns related to faculty workload. Threats to implementing the product may include lack of support from faculty and /or students as evidenced by negative responses on satisfaction surveys. Although external forces can affect the product, the project planner chose to move forward with implementing the capstone project as the internal findings were of more significance than the external findings (see Appendix D).

Project Objectives

Does the initiation of patient safety simulations increase critical thinking ability in baccalaureate nursing students? Patient safety simulations addressing hemorrhage were initiated in each year of the baccalaureate nursing program. Scenarios increased in complexity with each level. Scores achieved on the QSEN Patient Safety sub score of the Evolve HESI exam were used to evaluate increases in critical thinking scores. Scores were compared to previous cohorts who took the Evolve HESI exams but did not participate in simulations.

The project objectives included:

Objective 1: design leveled patient safety simulations addressing hemorrhage;

Objective 2: implement the simulations;

Objective 3: assess participating students for increased critical thinking ability through the use of QSEN sub scores on Evolve HESI tests:

Objective 4: compare QSEN sub scores on Evolve HESI tests to scores of previous student cohorts not participating in simulations.

Project Plan

Scope of Change

The project manager collaborated with the college dean, baccalaureate program director, baccalaureate program chair, course coordinators, instructors, and simulation lab coordinator to offer simulations designed to increase the baccalaureate nursing student's recognition and treatment of potential patient safety issues. Before the capstone project, the use of simulation at NKU was used primarily as a method of teaching nursing skills. As a result of the project, a program of leveled simulations throughout the nursing program increasing students' ability to identify and react to patient hemorrhage will be instituted. The project outcomes and conclusions have been presented to the baccalaureate nursing faculty and administration at Northern Kentucky University.

Setting

The setting for the capstone project was the Department of Nursing in the College of Health Professions at Northern Kentucky University. Northern Kentucky University is a public, four year university located in Highlands Heights, Kentucky. Highland Heights is a part of the greater Cincinnati metropolitan region. The university's enrollment is approximately 15,738 students. In the College of Health Professions, the Department of Nursing has an enrollment of 397 prelicensure nursing students. The number of prelicensure students includes both traditional students and ABSN (accelerated baccalaureate student nurses). The accelerated students have

earned a previous degree in a discipline other than nursing and will complete the program in 16 months. In 2012, 120 students (both traditional and ABSN) graduated with a baccalaureate degree in nursing. The department of nursing is comprised of twenty-six full-time and 45 adjunct faculty members. The simulation experiences were conducted on- campus in the simulation lab.

Stakeholders in the capstone project included the administration and faculty of the Department of Nursing at NKU, area hospitals, patients, healthcare professionals, and students enrolled in the traditional baccalaureate nursing program.

Group

Students are admitted into the nursing program twice yearly- once in the fall and once in the spring. The capstone project included the sophomore, junior, and senior traditional nursing students. Specifically, traditional students in the second, third, and fifth semesters of the program took part in the project. Approximately 60 students are in each semester (sophomore, junior, and senior) totaling approximatley180 students involved with the capstone project. Accelerated baccalaureate student nurses were not included in the capstone project.

Tools/Measures

A measurement tool ensures that values assigned to a category are consistent and meaningful from one study to another (Burns & Grove, 2005). Although tools are available to measure critical thinking (Watson-Glaser Critical Thinking Tool (WGCTA) and the California Critical Thinking Disposition Inventory (CCTDI), none are specific to the critical thinking ability of nursing students. However, Health Education Systems, Inc. (HESI), which was acquired by Elsevier in 2006, has offered research based testing since the early 1990's.

Critical thinking scores on HESI, a measurement tool specific to nursing students, will be used for this capstone project. The HESI exams are standardized exams developed by Health Education Systems, Inc. A variety of exams are designed to measure students' knowledge of nursing content and the application of content in specific areas (i.e. pediatrics, critical care, medical surgical nursing). The HESI exams offered include a HESI Admission Assessment, an entrance exam; specialty exams that evaluate clinical material; custom exams which are specialty exams designed by faculty at the testing institution; and the HESI Exit Exam (E2) which is a comprehensive exam (Morrison, Adamson, Nibert, & Hsia, 2004). The specialty exam and custom exam are administered in two versions-version 1 (V1) and version 2 (V2).

The HESI exams that were used for the capstone project were the V2 specialty exam given in the second semester (sophomore), the V2 custom exam given in the third semester (junior), and the E2 exam given in the sixth semester (senior). The HESI exams were chosen for the capstone project because (a) the HESI has been well documented regarding its validity and reliability, (b) the HESI exams are used at Northern Kentucky University as a benchmark in evaluating student progress throughout the curriculum, (c) critical thinking questions on the HESI exams are based upon Quality Safety Education in Nursing (QSEN) competencies, (d) scores from the three exams taken by the students could be used without further permission from HESI or additional cost, and (e) HESI exams became a requirement of the nursing program in 2009. Therefore, all participants in the capstone study were scheduled to take the exams as they progressed through the program. The HESI safety category defined by QSEN as basic safety design principles is sub-score of critical thinking questions regarding patient safety (see Appendix D).

The custom specialty HESI exam (V2) is composed of 55 questions of which five are pilot questions. The custom exam designed by HESI includes content as specified in syllabi that provided to HESI from the school's faculty. At Northern Kentucky University (NKU), the specialty V2 exam offered in the second semester covers fundamental nursing, the custom V2 given in the third semester covers medical surgical topics, and the E2 given in the sixth semester is comprehensive covering all subjects in the nursing program. Critical thinking test items are based on Paul's critical thinking theory and Bloom's taxonomy. All test items are reflective of the NCLEX test and are updated as the NCLEX blueprint is updated (see Appendix E).

The HESI exit exam (E2) is a 160 item comprehensive exam measuring critical thinking ability in patient care situations. Ten questions are pilot questions and are not calculated into the exam score. The exam is administered in the final semester of the nursing program. The E2 has been found to be highly predictive of success on the NCLEX-RN exam (Nibert & Morrison, 2013; Zweighaft, 2013).

According to Macha and McDonough (2012), "the reliability of a test means the test will perform the same way time after time" (p. 175). Reliability on all HESI exams is accomplished through an item analysis of each test. The Kuder Richardson Formula 20, a proprietary mathematical model, is calculated on exams that are taken, and it is this data that is used to estimate the reliability of the exam. Reliability testing is on-going and is recalculated every time a HESI test is taken and updated on all exams that include the same test question(s). On the most recent study conducted on the HESI specialty tests (the Ninth Exit Study Validity Study), all tests taken between September 2008 through August 2009 had a reliability of 0.84-0.92 (Zweighaft, 2013, p. 12).

To determine validity of the HESI exam, questionnaires are sent to deans and program directors at schools participating in HESI testing. The validity of a test means that the test is accurate and will produce correct results (Macha & McDonough, 2012, p. 175). Areas of interest to researchers are how the HESI test is used in the school's testing process and student success on the NCLEX-RN exam. In the Ninth Exit Study Validity Study, the validity of the specialty exams was 96.61% (n=3,790) (Zweighaft, 2013, p. 11).

Project Tasks

The project planner presented an overview of the capstone project to stakeholders at NKU (dean, chair, program director, and faculty). Following presentation of the project and approval from stakeholders, formal approval was obtained from the Institutional Review Board at NKU and University of Southern Indiana (USI) (See Appendix G).

Scenarios involving patient safety were created by the project planner. For the capstone project, students performed leveled patient safety simulations focusing on hemorrhage. The project planner chose hemorrhage as a patient safety issue due to the high percentage of deaths associated with hypovolemia (National Trauma Institute, 2015). In the second semester (sophomore), students took part in a simulation involving changes in vital signs indicating hemorrhage. Students in the third semester (junior) participated in a postpartum hemorrhage simulation. Fifth semester (senior level) students participated in a cardiac catheterization hemorrhage simulation (See Appendix H).

The baccalaureate nursing program at NKU uses standardized HESI exams as a method of assuring students comprehension of concepts and as a benchmark for the nursing program. Nursing students must receive a 900 on the Exit HESI in order to graduate from the program. In order to determine if an improvement in critical thinking occurred after students participated in

patient safety simulations, critical thinking sub-scores from the QSEN basic safety principles portion of the HESI exams were evaluated. The critical thinking sub scores of capstone project participants were then compared to the same category of sub scores received by students who were not participants in safety simulations but were administered HESI testing in 2010-2013. A comparison of HESI scores was used as an indicator of improvement or lack of improvement in critical thinking skills in the cohorts of nursing students.

Resources and Supports

Faculty productivity hours needed to present the simulation to nursing students were calculated into the facility's total productivity hours. All costs related to printing informed consents and surveys were the responsibility of the project leader and cost approximately $12.00. The Burkhardt Consulting Center, the statistical center at NKU, performed services regarding data interpretation. Although faculty is provided with three hours of date analysis at no cost, an additional $80.00 was payed by the project planner. Other support included faculty members who allowed the simulation to be conducted during class time and assistance from the coordinator of the simulation laboratory (see Appendix K).

Risks and Threats

Risks and threats included: a) lack of support from departmental faculty, b) inability to use the simulation lab during class times due to scheduling issues, c) weather related closing of the university, d) cancellation of simulation due to instructor or project planner illness, e) anxiety to students and faculty regarding simulation, and g) non-functioning simulators. None of the simulations required rescheduling.

Timeline

An objective of the project was to receive IRB approval by August 2014 and begin implementation of patient safety simulations with nursing students entering the senior and junior classes in August 2014. In spring semester 2015, sophomore nursing students were involved in a patient safety simulation. Sophomores and juniors took the HESI exams in the same semester as the patient safety simulation was conducted. Due to scheduling, senior students took the Exit HESI the semester after the patient safety simulation was completed. The HESI tests are scheduled as a part of the students' coursework and are given at specific intervals throughout the nursing program (see Appendix I).

Outcome Objectives

1) By August 2016, curriculum at Northern Kentucky University will incorporate a program of sequential patient safety simulations throughout each year of the nursing program as evidenced by safety simulation

2) To observe an increase in critical thinking scores of 2% in traditional baccalaureate nursing students as evidenced by increased critical thinking scores on the chosen measurement tool (HESI exam).

Marketing Plan

The capstone product allows the student nurse to experience critical patient situations in an environment that is safe for the patient and student. The safe environment encourages students to think through their actions and allows for mistakes to occur. By addressing mistakes, students are able to rethink the thought process that was used and to understand how and why another approach is more effective. Success of the capstone project, however, is dependent on faculty members' acceptance and promotion of patient safety simulations.

According to Kotter (2008), a sense of urgency must be established before change occurs. In the capstone project, it was the responsibility of the principle planner to create a sense of urgency. Several reasons exist as to why a lack of urgency may occur: (a) the importance of urgency in making changes is underestimated, (b) a disconnect in how urgency is perceived by faculty, (c) change is hurried, or (d) doubt in how the proposed change will help the situation (Kotter, 2008). Tactics to increase urgency are" bring the outside in, behave with urgency every day, find opportunity in crisis, and deal with the NoNos" (Kotter, 2008, p. 60). The principle planner addressed each tactic with faculty members (as appropriate).

Decreasing critical thinking scores earned by students on Evolve HESI exams in comparison to other nursing programs, the Institute of Medicine (1999) report discussing patient safety concerns, and the subsequent report *To Err is Human—To Delay is Deadly* " (Consumers' Union Safe Patient Project, 2009) became an impetus for the project and brought the "outside in." Development of critical thinking ability in an environment that is safe to the student and the patient is imperative. The use of human patient simulation allowing student nurses to participate in patient situations without fear demonstrated "urgency every day." The "opportunity in crisis" occurred when the National Council of State Boards of Nursing (Hayden, Smiley, Alexander, Kardong-Edgren, & Jeffries, 2014) determined the use of simulation to be as effective as clinical experiences in the education of student nurses. Lastly, dealing with the "NoNos" is an ongoing project that is addressed in faculty meetings and personal communication with faculty members.

Kotter's Sense of Urgency theory continues to be critical for the capstone project and will help the project grow and be sustained. The urgency of maintaining patient safety will always be at the forefront of nursing concerns as will assuring clinical competency in nursing professionals.

Financial Plan

The total cost of implementing this capstone project was $17,282.43. The in-kind costs were $15,610.78. The in-kind costs included faculty salaries, use of simulators and the simulator lab, and data evaluation. Student fees for administration of the HESI exam were also included in the in-kind costs. The salary of the full time faculty was calculated based on a departmental average of $65,000. The primary planner was responsible for the printing of consent forms through the university's print shop and the cost of attending a conference to further disseminate the capstone's findings (see Appendix J).

Evaluation Plan

Evaluation is an important part of the capstone project through ensuring project quality and sustainability (Ruch-Ross, Keller, Miller, Bassewitz, & Melinkovich, 2008). The evaluation plan for the capstone project included both long-term and short-term objectives (see Appendix K). The long-term objective was to increase baccalaureate nursing students' critical thinking ability regarding patient safety by initiating safety simulation throughout the curriculum. Evaluation of student nurses' critical thinking skills were measured using the QSEN patient safety critical thinking sub- score from the HESI V-2 and E2 exams.

Short-term objectives were used to assist in meeting the capstone project's long-term objective. Short-term objectives are important steps in successfully accomplishing the implementation of the long-term objective. The short-term objectives were (a) developing patient safety simulation scenarios, (b) implementing the simulations, (c) evaluation of nursing students' critical thinking ability in relation to patient safety through the use of the HESI exam, and (d) student satisfaction with patient safety simulation scenarios.

Development of patient safety simulation scenarios was an integral part of the capstone project. Patient safety scenarios regarding hemorrhage were included in each year of the nursing program (sophomore, junior, and senior). The scenarios were leveled per academic year according to Bloom's taxonomy and reflected student outcome objectives in accordance with the didactic courses in which the simulation were presented. Simulation scenarios in the cohorts were: a) sophomore students dealing with changing vital signs indicative of hemorrhage, b) junior students taking part in a postpartum hemorrhage simulation, and c) senior students caring for a patient hemorrhaging after a cardiac catheterization procedure (See Appendix H). Development of leveled simulation experiences and proposed student outcomes were completed by July 2014.

Implementation of the patient safety scenarios occurred in the second, third, and fifth semesters of the nursing program. Simulations began fall semester 2014 in the junior class (third semester students) and senior class (fifth semester students). The sophomore class (second semester students) participated in a patient safety simulation in spring semester 2015.

Evaluation through the administration of the HESI exam took place for all participating students after completion of the simulation(s). The mean HESI critical thinking QSEN sub-scores of participating students were compared to the same category in previous classes (2010, 2011, 2012, and 2013) in which patient safety simulations were not included.

Student satisfaction and perceived benefits from simulation was important to the integrity of the capstone project. Simulations should aid students in recognizing and responding to patient safety issues. Simulations that are not seen as helpful to the student may result in the student not transferring theoretical knowledge to practice. The Student Satisfaction and Self-Confidence in Learning Instrument, used with permission from the National League of Nursing, was employed

to measure student satisfaction with the patient safety simulations (see Appendices I and J). The Student Satisfaction and Self-Confidence in Learning Instrument consists of thirteen items-five rate student satisfaction with the simulation and eight address self-confidence after the simulation. The reliability for the instrument was tested using Cronbach's alpha: satisfaction reliability is 0.94% and self-confidence reliability is 0.87% (National League of Nursing [NLN], 2005).

Human Subjects Protection

In order to protect study participants from harm or unethical procedures, researchers are required to obtain project approval from an Institutional Review Board (IRB). The project leader obtained IRB approval from both Northern Kentucky University and the University of Southern Indiana. Students were informed that participation in the project was voluntary and consent could be withdrawn at any time without penalty. Students were also assured that any results obtained and used in dissemination of the project would be anonymous (See Appendix G). Informed consents were signed by all participating students. The consents were placed in a locked desk drawer to which only the project leader had a key.

Results

The purpose of the capstone project was to increase the critical thinking ability of baccalaureate nursing students through the implementation of leveled patient safety simulations threaded through the curriculum. A quantitative experimental design in which a convenience sample of baccalaureate nursing students (n=184) was used. The sample was further divided by class—sophomores (n=48), juniors (n=65), and seniors (n=71). To determine if the initiation of a patient safety simulation increased critical thinking ability in the student sample, the mean Evolve HESI test scores of participants who participated in the simulation (experimental group)

were compared with mean test scores of past cohorts of students (2010 to 2015) who did not participate in a patient safety simulation (control group). The mean scores from the Quality and Safety Education for Nurses section of the Evolve HESI (specifically the patient safety and quality category) were used for comparison. The benchmark mean was 900.

Mean test patient safety and quality category scores for sophomore baccalaureate nursing students (n=48) participating in patient safety simulations were compared with the mean test scores of sophomore students who did not participate in a patient safety simulation (n=567). To calculate the mean of previous years, a weighted average based on the number of students was calculated. In order to get a standard deviation for the previous years, samples with the same mean and standard deviation were simulated and then a standard deviation was calculated. There was a significant difference in the scores of sophomore baccalaureate nursing students who participated in the patient safety simulation (M=956, SD=133.4) and those from past years who did not (M=863.9, SD=155); t (58.3) =5.874; p=<0.0001. These results suggest that conducting a patient safety simulation with sophomore baccalaureate nursing students does have an effect on critical thinking ability. Specifically, results suggest that when sophomore baccalaureate nursing students participate in a patient safety simulation, critical thinking ability increases.

Table 1 Mean Category Scores of Sophomore Students

Semester	Number of Students	Mean Category Scores	SD
Spring 10	78	731	133.44
Fall 10	65	770	123.81
Spring 11	47	856	139.43
Fall 11	42	948	125.32
Spring 12	56	857	137.59
Fall 12	55	855	127.6
Spring 13	56	910	154.83
Fall 13	59	812	145.25
Spring 14	55	821	141.75
Fall 14	54	896	153.27
Spring 15	48	956	133.4

The mean test score for junior baccalaureate students (n=65) participating in a patient safety simulation was 865. Although mean scores were calculated as in the sophomore and senior classes, the Evolve HESI test taken by junior students was not implemented until 2012. Therefore, fewer students (n=234) were in previous cohorts. A significant difference in mean scores of students participating (M=865, SD 132.78) in the simulation than previous years mean scores of students who did not participate (M=853, SD=136); t= (104.3) =0.641, p=0.5229 was not found. The results suggest that participation of junior baccalaureate nursing students in a patient safety simulation does not have an effect on critical thinking ability. More specifically,

results suggest that when junior baccalaureate nursing students participate in a patient safety simulation, critical thinking ability is not increased. The lack of significance may be due to a decreased number of students in the control group not performing a simulation as compared to sophomore and senior control groups, failure of the simulation to address a patient safety concept adequately, or inability to transfer simulation concepts to test questions.

Table 2 Mean Category Scores of Junior Baccalaureate Students

Semester	Number of Students	Mean Category Score	SD
Spring 12	37	866	128.48
Fall 12	32	896	129.69
Spring 13	59	816	139.23
Fall 13	50	851	124.26
Spring 14	56	861	137.72
Fall 14	65	865	132.78

The project results demonstrated a significant difference in the scores of senior baccalaureate nursing students (n=71) who participated in the patient safety simulation (M=970, SD=147.99) and those senior students (n=421) from previous years who did not (M=884.1, SD=125); t (87.6) =4.621; p=<0.0001. These results suggest that conducting a patient safety simulation with senior baccalaureate nursing students does have an effect on critical thinking ability. Specifically, results suggest that when senior baccalaureate nursing students participate in a patient safety simulation, critical thinking ability increases.

Table 3 Mean Category Scores of Senior Baccalaureate Students

Semester	Number of Students	Mean Category Score	SD
Spring 10	77	794	108.4
Spring 11	56	831	110.44
Spring 12	49	905	104.39
Spring 13a	38	946	109.25
Spring 13b	53	968	104.84
Fall 13	35	938	77.87
Spring 14	63	890	88.58
Fall 14	50	881	147.99
Spring 15	71	970	147.99

(Please note that the Evolve HESI Exit exam was given to two different cohorts of seniors in Spring 13)

To determine if the patient safety simulation was seen as beneficial to participating students, a voluntary, anonymous survey was offered after each simulation experience (See Appendix K). The survey, the Educational Practice Questionnaire Student Version, was used with permission from the National League for Nursing (See Appendix L). Consisting of 13 questions regarding simulation, the survey is based on a five point Likert scale. Responses that could be selected were 1-strongly disagree; 2-disagree; 3- undecided; 4-agree; and 5-strongly agree. Although all students participating in the simulation (n= 184) were encouraged to complete the survey, 109 students participated. Further examination of the break-down regarding the percentage of each class completing the survey is shown in Table 4.

Table 4 Participation in Survey According to Cohort

Cohort	Number of Participants in Simulation	Number of Participants in Survey	Percentage of Participants Completing Survey
Sophomore	48	52	100%
Juniors	65	38	58.46%
Seniors	71	16	22.53%

Survey results reflect an additional four sophomore nursing students than the actual number of students participating in the capstone project. The discrepancy is due to four students who did not consent to the use of their Evolve HESI scores in the capstone project but did participate in the simulation and completed a survey.

Analysis of the survey results was done using a Wald test. The Wald test is use when attempting to test a value other than the mean (M. L. Glore, personal communication, June 3, 2015). Using the Wald test to determine a normal approximation among the respondent population, a confidence level of 95% was found for each question. A confidence level of 95% means that the proportion of the population that would agree or strongly agree is between the lower limits for p (0.624) and the upper limit for p (0.975). In addition, five questions could not be included in data analysis due to responses not being between the upper and lower limit as defined by use of the Wald test.

The 13 questions found to have significance were

- I enjoyed how my instructor taught the simulation (Question #3

- The way my instructor(s) taught the simulation was suitable to the way I learn (Question #5)
- I am confident that I am mastering the content of the simulation activity that my instructor presented to me (Question #6)
- I am confident that I am developing the skills and obtaining the required knowledge from this simulation to perform necessary tasks in clinical (Question #8)
- My instructors used helpful resources to teach the simulation (Question #9)
- I know how to get help when I do not understand the concepts covered in the simulation (Question #11)
- I know how to use simulation activities to learn critical aspects of these skills (Question #12)
- It is the instructor's responsibility to tell me what I need to learn of the simulation activity content during class time (Question #13)

Students overwhelmingly chose agree and strongly agree in the statistically significant questions regardless of the cohort. In the five questions that showed no significance, students also answered agree and strongly agree (See Table 1).

Limitations

Limitations to the project were discovered. The greatest limitation to the capstone project was the use of a convenience sample. Northern Kentucky University is a suburban campus

located five miles south of Cincinnati, Ohio. Although much of the student population consists of first generation college students, diversity is limited which may decrease the generalizability to other populations. The use of the HESI exams as a measurement of critical thinking ability was also a limitation. Not all schools of nursing use the HESI exam as a benchmark of success, which may hamper generalizability of the project in other institutions. Average cohort test scores were used for the capstone project rather than individual scores that may have influenced interpretation of data. In addition, critical thinking has been defined in many different contexts. Also, although the most commonly accepted definition of critical thinking developed by the Delphi Project of the American Philosophical Association was used in the capstone project, not all entities may agree with the definition.

Recommendations

Human Patient Simulation (HPF) has been shown to increase critical thinking ability in nursing students. As students graduate from nursing programs and enter practice, they must be able to transfer theoretical knowledge to clinical practice accurately and efficiently. Because students do not routinely take part in situations that concern critical patient safety incidents, facilitation of critical thinking ability by exposing students to safety scenarios is important. By offering simulations threaded throughout the curriculum, students are able to assess, plan, implement, and evaluate actions at their knowledge level without stress to the student or danger to a patient. The capstone project offers a model to schools of nursing attempting to increase student recognition of safety issues while meeting student developmental needs. Therefore, the recommendation of the project planner is to include leveled patient safety simulations in nursing curriculum.

Lessons Learned

Lessons were learned during the planning and implementation of the capstone project. As demonstrated in the project, high fidelity simulation (HFS) can be used to increase critical thinking ability in nursing students. However, not all students may feel comfortable with the use of HFS and therefore may not show improvement in critical thinking. The use of standardized patients (live actors representing patients) may show an increase in individual scores. Also, using the Evolve HESI test as a measurement tool may not be optimal. Because of the use of high stakes testing at Northern Kentucky University associated with Evolve HESI exams, students may experience a higher than normal stress level during testing. Higher levels of stress could possibly interfere with student's perception of questions.

Students were asked to voluntarily complete a satisfaction survey. One hundred percent of the sophomore class completed surveys. However, the junior and senior classes had a much smaller number of completed surveys. Although not integral to capstone project results, feedback is an important component in maintaining and sustaining simulations. With future research projects, cohorts will be required to answer surveys. Also, demographic information was not collected. In future capstone projects, demographic information will be collected to enrich the findings.

A serendipitous finding occurred during the capstone project. Junior students taking part in a postpartum hemorrhage simulation did not show a significant increase in Evolve HESI critical thinking scores. Postpartum hemorrhage is a serious complication of childbirth that may be occult or not present in the same pattern as other types of hemorrhages. According to the World Health Organization (2015), hemorrhage is the leading cause of death in postpartum patients (World Health Organization [WHO], 2015). During pregnancy, cardiac output increases

by 45%-50% in order to supply oxygen and nutrients to the growing uterus, placenta, and fetus. After delivery, although the patient may be hemorrhaging, she does not demonstrate classic signs of hemorrhage (tachycardia, hypotension, oliguria, decreasing hematocrit, and mental confusion) until approximately 1800ml to 2100ml. of blood have been lost (Davidson, London, & Ladewig, 2012, p. 1115). Therefore, the patient deteriorates rapidly after the diagnosis is made. Prevention and quick treatment of postpartum hemorrhage is critical to decreasing patient mortality. More research needs to be conducted to discover if students conclude that seemingly healthy patients are not safety risks, and therefore are not assessed as strenuously as are patients who are recognized at risk or ill.

Maintaining and Sustaining Change

According to Parsons and Cornett (2011), "sustainability is achieved when a process or outcome, at a minimum of a year later, has not returned to its former status or is delayed" (p. 37). To sustain the capstone project, the researcher will (a) maintain close collaboration with the nursing faculty, (b) form the patient safety simulation committee (PSSC), and (c) monitor Evolve HESI scores for improvement or lack of improvement and adjust simulation scenarios accordingly. As patient safety simulations are repeated on a yearly basis throughout the nursing program and critical thinking scores on the Evolve HESI exams increase, simulations will become part of the culture of the Department of Nursing.

Collaboration with Faculty

Baccalaureate nursing faculty and the project planner were involved in combining course and patient safety simulation objectives. The goal of the objectives was to create student outcomes that would assure an optimal learning experience. Collaboration of faculty and the project planner created a personal involvement and fostered ownership of the change among

faculty. In the future, discussions from faculty may result in offering workshops to increase confidence and interest in working with simulation. Additionally, the project planner will continue to address concerns of faculty regarding the scenarios and impact upon class times.

Patient Safety Simulation Committee (PSSC)

The project planner has recommended the creation of a Patient Safety Simulation Committee (PSSC) to evaluate student success and develop future scenarios. The PSSC would be a division of the Simulation Committee, a standing committee within the nursing department. Recommended membership in the PSSC includes faculty members from each level (sophomore, junior, and senior) of the baccalaureate nursing program, the simulation lab coordinator, and the project planner. Student representation in the PSSC will be solicited from the sophomore, junior, and senior classes to evaluate student experiences with patient safety simulations and provide suggestions for future simulations.

Monitoring of Evolve HESI Scores

During the capstone project, the project planner evaluated student critical thinking ability through scores received on the Evolve HESI exam (QSEN patient safety indicators). Improvement in scores is a visual representation of the success of the capstone. By celebrating increased HESI scores, momentum for the capstone can be maintained. As the simulations continue in the curriculum, if scores do not increase or trend downward, the project planner will reevaluate the scenarios and objectives and, using faculty and student feedback, adjust appropriately.

Dissemination

Because of the impact that critical thinking has in relation to patient safety, the capstone project will be disseminated to stakeholders and other healthcare professionals to promote an

innovative educational strategy that can be repeated or applied in other institutions (McNally Forsyth, Wright, Scherb, & Gasper, 2010). Through dissemination, educational programs can present students with a product that will not only facilitate development of critical thinking ability but will also aid in student retention and employment success. Patients will also be impacted by an increase in safety awareness by graduate nurses that affects mortality and morbidity as well as financial issues.

The project planner has reported capstone outcomes to the Northern Kentucky University Department of Nursing faculty and College of Health Professions' administrators. In addition, posters have been presented at the 2015 Evidence Based Practice Research Conference at the University of Southern Indiana and at the Northern Kentucky Nursing Research Collaborative.

In April 2016, a podium presentation will be given at the Spring USI Evidence Based Practice Research Conference and also at the Northern Kentucky Nursing Research Collaborative. The project planner will also submit abstracts to Sigma Theta Tau and Professional Nurse Educator Group for poster presentations in 2016. Additionally, manuscripts regarding the synthesis of Kolb's (1984) theory of experiential nursing and nursing process and the use of leveled simulations to teach safety concepts will be submitted.

Conclusion

Every aspect of the nursing profession focuses on safe care of the patient. As the healthcare environment changes through increased use of technology, higher patient acuities, and decreasing numbers of experienced nurses, graduate nurses must be able to make life changing observations and decisions in a matter of seconds. In order for patients to receive optimal care,

educators must provide student nurses with the opportunity to develop critical thinking ability in a safe environment.

The capstone project focused on the use of leveled patient safety simulations throughout the curriculum. The initial safety concept was hemorrhage. Simulations became more complex in accordance with curriculum progression. Sophomore students in the first year of the nursing program responded to a simulation involving a gastro-intestinal bleed; junior nursing students worked with a postpartum hemorrhage; and senior students performed a simulation focusing on a femoral arterial hemorrhage. A significant increase was seen in Evolve HESI critical thinking scores in the sophomore and senior cohorts when compared with past cohorts that did not have a simulation. No significance was found, however, in the junior cohort when compared to previous junior cohorts. Through the initiation of leveled patient safety simulations across the curriculum, student nurses will be empowered to safely develop critical thinking ability without causing harm to our most vulnerable population-our patients.

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Appendix A

Student Satisfaction with Simulation Survey Results

1. The teaching methods used in this simulation were helpful and effective. * Class Cross tabulation

			Class			
			Sophomores	Juniors	Seniors	Total
1. The teaching methods used in this simulation were helpful and effective.	Undecided	Count	1	0	0	1
		% within Class	1.9%	0.0%	0.0%	0.9%
	Agree	Count	21	19	9	49
		% within Class	40.4%	50.0%	56.3%	46.2%
	Strongly Agree	Count	30	19	7	56
		% within Class	57.7%	50.0%	43.8%	52.8%
Total		Count	52	38	16	106
		% within Class	100.0%	100.0%	100.0%	100.0%

2. The simulation provided me with a variety of learning materials and activities to promote my learning the medical surgical curriculum. * Class Cross tabulation

			Class			
			Sophomores	Juniors	Seniors	Total
2. The simulation provided me with a variety of learning materials and activities to promote my learning the medical surgical curriculum.	Undecided	Count	2	4	3	9
		% within Class	3.8%	10.5%	17.6%	8.4%
	Agree	Count	19	18	8	45
		% within Class	36.5%	47.4%	47.1%	42.1%
	Strongly Agree	Count	31	16	6	53
		% within Class	59.6%	42.1%	35.3%	49.5%
Total		Count	52	38	17	107
		% within Class	100.0%	100.0%	100.0%	100.0%

3. I enjoyed how my instructor taught the simulation. * Class Cross tabulation

			Class			
			Sophomores	Juniors	Seniors	Total
3. I enjoyed how my instructor taught the simulation.	Disagree	Count	0	0	1	1
		% within Class	0.0%	0.0%	5.9%	0.9%
	Undecided	Count	1	4	4	9
		% within Class	1.9%	10.5%	23.5%	8.4%
	Agree	Count	15	15	5	35
		% within Class	28.8%	39.5%	29.4%	32.7%
	Strongly Agree	Count	36	19	7	62
		% within Class	69.2%	50.0%	41.2%	57.9%
Total		Count	52	38	17	107
		% within Class	100.0%	100.0%	100.0%	100.0%

4. The teaching materials used in this simulation were motivating and helped me to learn. * Class Cross tabulation

			Class			
			Sophomores	Juniors	Seniors	Total
4. The teaching materials used in this simulation were motivating and helped me to learn.	Undecided	Count	3	1	1	5
		% within Class	5.8%	2.6%	6.3%	4.7%
	Agree	Count	19	23	10	52
		% within Class	36.5%	60.5%	62.5%	49.1%
	Strongly Agree	Count	30	14	5	49
		% within Class	57.7%	36.8%	31.3%	46.2%
Total		Count	52	38	16	106
		% within Class	100.0%	100.0%	100.0%	100.0%

5. The way my instructor(s) taught the simulation was suitable to the way I learn. * Class Cross tabulation

			Class			
			Sophomores	Juniors	Seniors	Total
5. The way my instructor(s) taught the simulation was suitable to the way I learn.	Undecided	Count	4	4	3	11
		% within Class	7.7%	10.5%	17.6%	10.3%
	Agree	Count	12	21	8	41
		% within Class	23.1%	55.3%	47.1%	38.3%
	Strongly Agree	Count	36	13	6	55
		% within Class	69.2%	34.2%	35.3%	51.4%
Total		Count	52	38	17	107
		% within Class	100.0%	100.0%	100.0%	100.0%

6. I am confident that I am mastering the content of the simulation activity that my instructors presented to me. * Class Cross tabulation

			Class			
			Sophomores	Juniors	Seniors	Total
6. I am confident that I am mastering the content of the simulation activitiy that my instructors presented to me.	Disagree	Count	0	2	1	3
		% within Class	0.0%	5.3%	5.9%	2.8%
	Undecided	Count	10	6	5	21
		% within Class	19.6%	15.8%	29.4%	19.8%
	Agree	Count	29	21	9	59
		% within Class	56.9%	55.3%	52.9%	55.7%
	Strongly Agree	Count	12	9	2	23
		% within Class	23.5%	23.7%	11.8%	21.7%
Total		Count	51	38	17	106
		% within Class	100.0%	100.0%	100.0%	100.0%

7. I am confident that this simulation convered critical content necessary for the mastery of medical surgical curriculum. * Class Cross tabulation

			Class			
			Sophomores	Juniors	Seniors	Total
7. I am confident that this simulation covered critical content necessary for the mastery of medical surgical curriculum.	Undecided	Count	2	3	3	8
		% within Class	3.8%	7.9%	17.6%	7.5%
	Agree	Count	20	20	9	49
		% within Class	38.5%	52.6%	52.9%	45.8%
	Strongly Agree	Count	30	15	5	50
		% within Class	57.7%	39.5%	29.4%	46.7%
Total		Count	52	38	17	107
		% within Class	100.0%	100.0%	100.0%	100.0%

8. I am confident that I am developing the skills and obtaining the required knowledge from this simulation to perform necessary tasks in a clinical setting. * Class Cross tabulation

			Class			
			Sophomores	Juniors	Seniors	Total
8. I am confident that I am developing the skills and obtaining the required knowledge from this simulation to perform necessary tasks in a clinical setting.	Disagree	Count	0	1	0	1
		% within Class	0.0%	2.6%	0.0%	0.9%
	Undecided	Count	4	2	1	7
		% within Class	7.7%	5.3%	5.9%	6.5%
	Agree	Count	25	26	13	64
		% within Class	48.1%	68.4%	76.5%	59.8%
	Strongly Agree	Count	23	9	3	35
		% within Class	44.2%	23.7%	17.6%	32.7%
Total		Count	52	38	17	107
		% within Class	100.0%	100.0%	100.0%	100.0%

9. My instructors used helpful resources to teach the simulation. * Class Cross tabulation

			Class			
			Sophomores	Juniors	Seniors	Total
9. My instructors used helpful resources to teach the simulation.	Disagree	Count	0	1	0	1
		% within Class	0.0%	2.6%	0.0%	0.9%
	Undecided	Count	2	3	5	10
		% within Class	3.8%	7.9%	29.4%	9.3%
	Agree	Count	21	17	10	48
		% within Class	40.4%	44.7%	58.8%	44.9%
	Strongly Agree	Count	29	17	2	48
		% within Class	55.8%	44.7%	11.8%	44.9%
Total		Count	52	38	17	107
		% within Class	100.0%	100.0%	100.0%	100.0%

10. It is my responsibility as the student to learn what I need to know from this simulation activity. * Class Cross tabulation

			Class			
			Sophomores	Juniors	Seniors	Total
10. It is my responsibility as the student to learn what I need to know from this simulation activity.	Undecided	Count	2	0	0	2
		% within Class	3.8%	0.0%	0.0%	1.9%
	Agree	Count	15	22	14	51
		% within Class	28.8%	57.9%	82.4%	47.7%
	Strongly Agree	Count	35	16	3	54
		% within Class	67.3%	42.1%	17.6%	50.5%
Total		Count	52	38	17	107
		% within Class	100.0%	100.0%	100.0%	100.0%

11. I know how to get help when I do not understand the concepts covered in the simulation. * Class Cross tabulation

			Class			
			Sophomores	Juniors	Seniors	Total
11. I know how to get help when I do not understand the concepts covered in the simulation.	Disagree	Count	1	1	2	4
		% within Class	1.9%	2.6%	11.8%	3.7%
	Undecided	Count	4	1	1	6
		% within Class	7.7%	2.6%	5.9%	5.6%
	Agree	Count	13	18	9	40
		% within Class	25.0%	47.4%	52.9%	37.4%
	Strongly Agree	Count	34	18	5	57
		% within Class	65.4%	47.4%	29.4%	53.3%
Total		Count	52	38	17	107
		% within Class	100.0%	100.0%	100.0%	100.0%

12. I know how to use simulation activities to learn critical aspects of these skills. * Class Cross tabulation

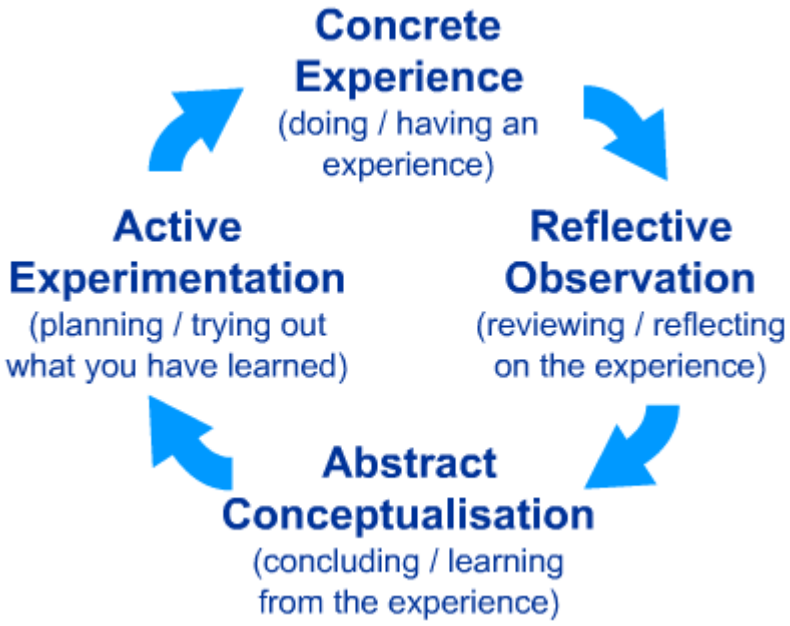
			Class			
			Sophomores	Juniors	Seniors	Total
12. I know how to use simulation activities to learn critical aspects of these skills.	Undecided	Count	4	3	3	10
		% within Class	7.7%	7.9%	17.6%	9.3%
	Agree	Count	24	16	12	52
		% within Class	46.2%	42.1%	70.6%	48.6%
	Strongly Agree	Count	24	19	2	45
		% within Class	46.2%	50.0%	11.8%	42.1%
Total		Count	52	38	17	107
		% within Class	100.0%	100.0%	100.0%	100.0%

13. It is the instructor's responsibility to tell me what I need to learn of the simulation activity content during class time. * Class Cross tabulation

			Class			
			Sophomores	Juniors	Seniors	Total
13. It is the instructor's responsibility to tell me what I need to learn of the simulation activity content during class time.	Strongly Disagree	Count	0	0	1	1
		% within Class	0.0%	0.0%	5.9%	0.9%
	Disagree	Count	8	0	1	9
		% within Class	15.4%	0.0%	5.9%	8.4%
	Undecided	Count	13	4	4	21
		% within Class	25.0%	10.5%	23.5%	19.6%
	Agree	Count	15	25	3	43
		% within Class	28.8%	65.8%	17.6%	40.2%
	Strongly Agree	Count	16	9	8	33
		% within Class	30.8%	23.7%	47.1%	30.8%
Total		Count	52	38	17	107
		% within Class	100.0%	100.0%	100.0%	100.0%

Appendix B

Kolb's Experiential Learning Cycle



("Kolb's Experiential Learning Model," 2012)

Appendix C

Kolb's/Nursing Process Model

Appendix D

SWOT Analysis

Strengths	Weaknesses	Opportunities	Threats
Supports vision and mission of institution	Faculty buy-in	Increased student success on HESI and NCLEX exams	Failure of key stakeholders to support project
Develops critical thinking	Scheduling simulation lab times	Expansion to other programs	Decreasing student enrollment
Threads information throughout the curriculum	Lack of faculty skilled in simulation	Increased employer satisfaction with graduates which may influence hiring of students from schools using capstone product	Lack of student support as evidenced in satisfaction surveys
Reinforces student	Increased faculty		

learning	workload		
Aligns with student development			

Appendix E

QSEN Patient Safety Objectives

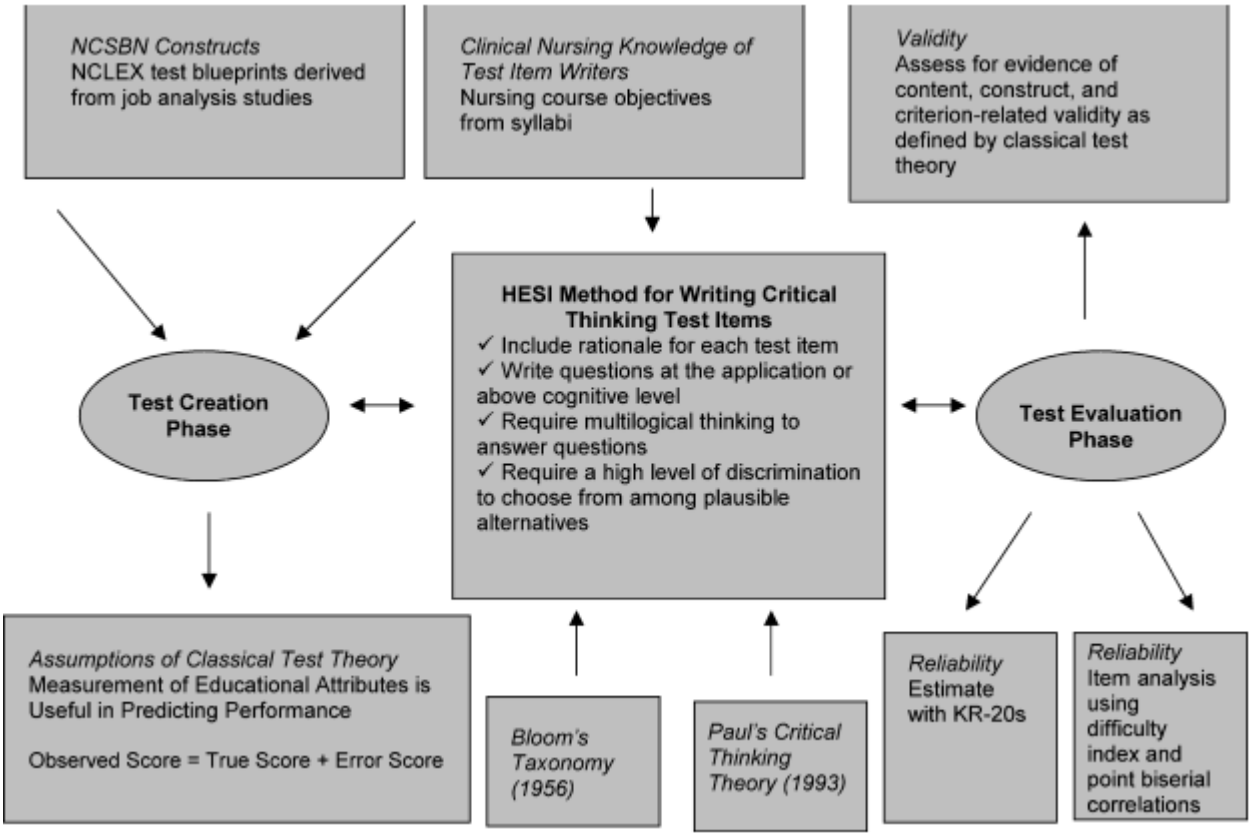
SAFETY		
Definition: Minimizes risk of harm to patients and providers through both system effectiveness and individual performance.		
Knowledge	**Skills**	**Attitudes**
Examine human factors and other basic safety design principles as well as commonly used unsafe practices (such as, work-arounds and dangerous abbreviations) Describe the benefits and limitations of selected safety-enhancing technologies (such as, barcodes, Computer Provider Order Entry, medication pumps, and automatic alerts/alarms) Discuss effective strategies to reduce reliance on memory	Demonstrate effective use of technology and standardized practices that support safety and quality Demonstrate effective use of strategies to reduce risk of harm to self or others Use appropriate strategies to reduce reliance on memory (such as, forcing functions, checklists)	Value the contributions of standardization/reliability to safety Appreciate the cognitive and physical limits of human performance
Delineate general categories of errors and hazards in care Describe factors that create a culture of safety (such as, open communication strategies and organizational error reporting systems)	Communicate observations or concerns related to hazards and errors to patients, families and the health care team Use organizational error reporting systems for near miss and error reporting	Value own role in preventing errors

Describe processes used in understanding causes of error and allocation of responsibility and accountability (such as, root cause analysis and failure mode effects analysis)	Participate appropriately in analyzing errors and designing system improvements Engage in root cause analysis rather than blaming when errors or near misses occur	Value vigilance and monitoring (even of own performance of care activities) by patients, families, and other members of the health care team
Discuss potential and actual impact of national patient safety resources, initiatives and regulations	Use national patient safety resources for own professional development and to focus attention on safety in care settings	Value relationship between national safety campaigns and implementation in local practices and practice settings

(Cronenwett et al., 2007)

Appendix F

HESI Conceptual Framework for Question Development



(Morrison, Adamson, Nibert, & Hsia, 2004)

Appendix G

IRB/Consents

UNIVERSITY OF SOUTHERN INDIANA

Improving Baccalaureate Nursing Students' Critical Thinking Ability through the Initiation of Patient Safety Simulations

Informed Consent Document

You are invited to participate in a research study to increase baccalaureate nursing students' critical thinking skills regarding patient safety by using patient safety simulations. Deborah Engel, RNC, MSN, BA. is conducting this study, under the supervision of M. Jane Swartz, DNP, ACNS-BC, RN. Deborah Engel can be reached by email (engeld1@nku.edu) or telephone (859 572-1571). For questions about your rights as a research participant or to discuss problems, complaints or concerns about a research study, or to obtain information, or offer input, contact the University of Southern Indiana Office of Sponsored Projects and Research Administration, 8600 University Blvd., Wright Administration Rm. 104, Evansville, IN 47712-3596, 812-228-5149 or by email at rcr@usi.edu. We ask that you read this form and ask any questions you may have before agreeing to be a part of the study.

PURPOSE: The purpose of this study is to increase student nurses' critical thinking skills regarding patient safety.

PROCEDURES: If you agree to be in the study, you will do the following things*:* you will participate in a patient safety simulation during class time, complete an anonymous survey, and will take the required HESI Evolve test after the simulation has been done. If you consent to participate in the study, you are allowing the researcher (Deborah Engel) permission to include the score you received on the HESI Evolve QSEN patient safety and quality category into the class average for that category. The researcher will be comparing HESI Evolve average scores for students who have participated in a patient simulation experience to students in previous semesters that did not participate in a patient simulation experience. The HESI Evolve tests to be used in the study are the v2, v1 (or mid curricular), and the E2 (or Exit HESI). In particular, the category QSEN (Quality and Safety Education in Nursing) patient safety and quality will be used for purpose of comparison. Only the mean QSEN patient safety and quality score of the class will be used for the study, not individual scores.

TIME COMMITMENT: Your participation in this study will take one class period (75 minutes).

RISKS AND BENEFITS: The risk of taking part in this study is anxiety during the simulation experience. The benefits of taking part in this study are possibly increased scores on HESI or NCLEX (National Council Licensure Examination) exams, increased confidence in identifying and preventing harm to the patient, and decreased harm to the patient.

CONFIDENTIALITY: Efforts will be made to keep your personal information confidential. Absolute confidentiality cannot be guaranteed. Your identity will be held in confidence in the event that the study may be published. Databases in which your information may be stored will also be kept in confidence. Because the primary researcher is only using the class average of the QSEN patient safety and quality sub score of the HESI exam, individual names or individual scores will not be identified. The data that is being used for the research study may be found on the K drive in the Department of Nursing at Northern Kentucky University. The K drive is password protected and available to full time nursing faculty at Northern Kentucky University. In addition, Professor Julie Hart will obtain consent of students who currently are taught by the primary researcher, Deborah Engel. Professor Hart will only be obtaining consent for this group—she will not be looking at or using the data in any way. Consents, surveys, and the mean class score on the HESI QSEN patient safety and quality category for the group that is currently being taught by Professor Engel will not be looked at until the following semester. In the following semester, those students will no longer have Professor Engel as their instructor. All consent forms and anonymous surveys will be kept in a locked drawer in the primary investigator's office at NKU.. The surveys and consent forms will be kept for five years and will be destroyed after that time. No one but the researcher will have access to the key to the drawer.

COMPENSATION: There is no compensation for participating in this research study**.**

VOLUNTEERING FOR THE STUDY: Taking part in this study is voluntary. You may choose not to take part or may leave the study at any time. Leaving the study will not result in any penalty or loss of benefits to which you are entitled. Your decision whether or not to participate in this study will not affect your current or future relations with the investigator(s). Student grades or other class scores will not be influenced by this research and withdrawal will have no effect on passing or failing the classes associated with the study (NRS 250, 360, 439L).

ALTERNATIVES TO TAKING PART IN THE STUDY: The alternative to taking part in the study is to not participate in the study. You will still participate in the patient safety simulation, survey, and the HESI Evolve test. However, your HESI QSEN patient safety and quality sub score will not be included in the class average score.

PARTICIPANT'S CONSENT: I have read the information provided to me. I have had all of my questions answered. Based on the statements listed above, I give my consent to participate in this research study. I agree to take part in this study.

Participant's Name: _____
Participant's Signature:_____ **Date**:_____

Researcher's Name: _____
Researcher's Signature:_____ **Date**:_____

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NKU NORTHERN KENTUCKY UNIVERSITY

May 27, 201

Dear Internal Review Board:

It is my understanding that Deborah Engel wishes to conduct a capstone project at Northern Kentucky University's College of Health Professions Department of Nursing titled "Improving Baccalaureate Nursing Students' Critical Thinking Ability through the Initiation of Patient Safety Simulations". Ms. Engel has informed me of the design of the study, the targeted population, and what the study entails. I grant her permission to conduct the capstone project through the use of simulation experiences and gathering aggregate Evolve test QSEN patient safety sub scores and accessing and gathering prior aggregate Evolve test scores for the years 2010, 2011,2012, and 2013. I have the authority to do so.

Signature Redacted

Carrie A. McCoy, Ph.D., M.S.P.H., R.N., C.E.N.

Chairperson

Department of Nursing

College of Health Professions

Northern Kentucky University

mccoy@nku.edu

INSTITUTIONAL REVIEW BOARD

Notice of Approval
Expedited Review

NKU
NORTHERN KENTUCKY UNIVERSITY
RESEARCH FOUNDATION

DATE: August 1, 2014

TO: Deb Engel, Nursing

FROM: Philip J. Moberg, NKU IRB Chair

RE: IRB Protocol Titled: ***"Improving Baccalaureate Nursing Students' Critical Thinking Ability through the Initiation of Patient Simulations"***

IRB Protocol: # 14-243; 2015-004NH

APPROVED: July 8, 2014 **EXPIRES:** July 07, 2015

The NKU Institutional Review Board (IRB) has reviewed and approved this research protocol for the period indicated.

Federal Requirements for Principal Investigators

Federal Regulations (45.CFR.46.) require that Principal Investigators (PIs):

Renew annually: PIs must reapply for IRB approval each year until the study is inactive. To renew, submit a request in writing to the IRB Administrator prior to the expiration date. If no changes have been made to the research project, simply complete the first two-pages of the IRB Application with signatures, mark the box labeled "Continuation", attach most recent CITI scores AND consent form and submit to the IRB Administrator in 724 of the Lucas Administrative Center. You will receive a pending expiration notice from the IRB Administrator approximately 60 days prior that date. IRB forms and information can be found at http://rgsrs.nku.edu/research/rgc/irb/irb.html

Report immediately: PIs must report any proposed changes in design, procedures, consent process or forms, recruiting announcements, risk to participants, or participant sample to the IRB for approval. Changes may be implemented only after IRB approval has been received, except to prevent immediate hazards to the participant. PIs also are required to report unanticipated problems to the IRB immediately.

Advise promptly: PIs must notify the IRB when the study is complete (data collection finished). You will receive a closure report that we request you complete and return.

Retain data / consent: PI's must retain all data and signed consent forms for three years after the end of the study. Data that includes HIPAA protected personal health identifiers must be retained for six years after the end of the study. (Subpart A: 46.115)

Submit reports: PIs must provide a copy of any audit, inspection report, or finding issued to them by any sponsor, funding agency, regulatory agency, cooperative research group, or contract research organization.

Human Subject Research Federal Regulations

Federal Wide Assurance **#FWA00009011**

Attachment: Documentation of Review and Approval Signatures

Northern Kentucky University
Institutional Review Board (IRB) for the Protection of Human Subjects
Office of Research, Grants & Contracts Attn: IRB Administrator, AC 724,
Nunn Drive, Highland Heights, KY 41099
859-572-5168 (Email: irb@nku.edu)

For IRB Committee Use Only
IRB # 14-243
Date Received 6/11/14
Date Posted 6/12/14
Alternate institution IRB # 2015-004 NH

APPLICATION FOR IRB REVIEW

Please type information directly into this form on your computer. Print your application, attach any documents and forward to the above address. NKU IRB requires original signatures on page 2. The remaining information may be emailed if preferred. Handwritten packets will be returned. Please do not staple, fold or fax. NOTE: Attach your CITI training completion certificate; review will not begin until this is received. CITI training scores must be 80% or above on each individual module –for more information see NKU CITI Webpage.

IRB Administrative Use ONLY

Approval Status/Campus Level Review - This Protocol for the use of human subject(s) has been reviewed by the Northern Kentucky University Institutional Review Board:

____Exempt Review ___✓___Expedited Review ____Full Review ____Certified ____Not Research

NKU IRB Member: Signature Redacted Date: 07.08.14

Application Type Check 'New' to submit a study for the first time, 'Revise' to change or modify a currently approved study, or 'Continue' to extend or renew a currently approved study. For currently approved studies, enter the IRB number.	*Choose One:*	1. __X__ New study 2. _____ Revise current active study IRB # _____ 3. _____ Continue current study with no changes IRB # _____ 4. _____ Continue study about to expire with changes IRB # _____
	Complete if applicable:	1. _____ Funded research project # _____ 2. _____ Teaching course # _____
Project Start & End Dates (Note - Research may not begin prior to IRB approval)	Estimated Start Date: (mm/dd/yy) 09/05/14	Estimated End Date: (mm/dd/yy) 12/31/15
PROJECT TITLE:	"Improving Baccalaureate Nursing Students' Critical Thinking Ability through the Initiation of Patient Safety Simulations"	

PRINCIPAL INVESTIGATOR (last name, first name)		Department (e.g., Dept. of Teacher Education)
Deborah Engel MSN, RNC, BA		Nursing
Campus Address ("none" if applicable)	NKU Email	Personal Email (students only)
367 Albright Health Center	Engeld1@nku.edu	
Home Mailing Address (Street, City, State, ZIP)		Campus Phone (if none, enter home phone)
878 Suncreek Ct., Cincinnati Oh 45238		572-1571
CITI Training completed? (check one) Attach CITI Completion Certificate OK	____ Yes ____ No Note: Scores of 80% required on each individual module; individual programs may require additional modules.	
Rank (check one) MKS	__ NKU Faculty/Staff ____ NKU Student ____ Non-NKU Researcher	

FACULTY ADVISOR (if principal investigator is a student)	Department (e.g., Dept. of Teacher Education)	Campus Phone
M. Jane Swartz RN, DNP, ACNS-BC	Nursing	812-465-1162
Campus Address (building & room)	Current Email	
8600 University BLVD. Evansville, IN 47712	mswartz@usi.edu	
CITI Training completed? (check one) Attach CITI Completion Certificate JC	____ Yes ____ No Note: Scores of 80% required on each individual module; individual programs may require additional modules.	
Rank (check one) MKS	____ NKU Faculty/Staff ____ NKU Student ____ Non-NKU researcher	

NOTE: If additional persons (e.g., faculty, staff, students) are involved in recruiting participants, conducting this research, interacting with participants, collecting data, or working with data that are not anonymous, complete needed information on page three.

Principal Investigator & Faculty Advisor Assurance

The original signature of the principal investigator (and faculty advisor if applicable) is required before this application can be processed. Scanned and faxed signatures, signature stamps and proxy signatures are not accepted.

I certify that:

- The information provided in this application, and all attachments, is complete and correct.
- I have ultimate responsibility for protecting the rights and welfare of human subjects, the conduct of this study, and the ethical actions of subjects when participating in this research.
- I will obtain informed consent or assent from all human subjects as required.
- I will make no change to the human subjects protocol or consent form(s) without approval by the NKU IRB.
- I have completed the CITI Educational training required to conduct this project. (Scores of 80% required on each module)
- I will report unanticipated problems, adverse effects, and new information that may affect the risk-benefit assessment to the NKU IRB office (859-572-5168).
- The proposed research has not yet begun, is not currently underway, and will not begin until IRB approval has been obtained.

Signature Redacted

Principal Investigator (Researcher) Signature — Date: 6/10/14

Signature Redacted

Faculty Advisor Signature — Date: 6/9/2014

Incomplete packets may delay the review process significantly

Applications that omit requested information are likely to delay the review process. Although IRB reviewers will make every effort to respond to your application within ten class business days, this may not be possible during periods of high volume, semester breaks or holidays. If you receive comments from reviewers, be aware that additional time will be needed to respond to your reply. You cannot assume that you will receive an approval within a two week time frame.

ADDITIONAL RESEARCHERS OR MULTIPLE PRINCIPAL INVESTIGATORS

Complete information below for any persons (e.g., NKU students, faculty, and staff, or other non-NKU personnel) involved in recruiting participants, conducting this research study, interacting with participants, collecting data, or working with data that are not anonymous. If no other persons are involved, leave this section blank. An additional page for more researchers can be found on NKU IRB webpage.

Other Researcher 1 - Name		Department
Julie Hart		nursing
Campus Address (building & room; if none, enter home address)		Current Email
364 Albright Health Center		Hartj5@nku.edu
CITI Training completed? (check one) Attach CITI Completion Certificate	__x__ Yes ____ No	Note: Scores of 80% required on all six modules; individual programs may require additional modules
Rank (check one)	__x__ NKU Faculty/Staff ____ NKU Student	____ Non-NKU researcher
Other Researcher 2 - Name		Department
Campus Address (building & room; if none, enter home address)		Current Email
CITI Training completed? (check one) Attach CITI Completion Certificate	____ Yes ____ No	Note: Scores of 80% required on all six modules; individual programs may require additional modules
Rank (check one)	____ NKU Faculty/Staff ____ NKU Student	____ Non-NKU researcher

University of Southern Indiana
Office of Sponsored Projects and Research Administration
8600 University Boulevard * Evansville, Indiana 47712 * 812/465-1126
www.usi.edu/ospra - rcr@usi.edu

DATE:	July 16, 2014
TO:	Deborah Engel, MSN, RNC, BA
FROM:	USI Office of Sponsored Projects and Research Administration
PROJECT TITLE:	[626825-1] Improving Baccalaureate Nursing Students' Critical Thinking Ability Through the Initiation of Patient Safety Simulations
REFERENCE #:	2015-004-NH
ACTION:	APPROVED
IRB APPROVAL DATE:	July 16, 2014
REVIEW CATEGORY:	TYPE 1 RESEARCH - Exempt Category**#1**, 2, 4

The above project has been approved by USI's IRB under the provision of Federal Regulations 45 CFR 46.

This approval is based on the following conditions:

1. The materials you submitted to the IRB (through the Sponsored Research Office) provide a complete and accurate account of how human subjects are involved in your project.
2. You will carry on your research strictly according to the procedures as described in the materials presented to the IRB.
3. You will report to the Sponsored Research Office any changes in procedures that may have a bearing on this approval and require another IRB review.
4. If any changes are made, you will submit the modified project for IRB review.
5. You will immediately report to the Office of Sponsored Projects and Research Administration any problems or adverse events encountered while using human subjects.

This project requires continuing IRB review on an annual basis. Please use the appropriate forms for this procedure. Your documentation for continuing review must be received with sufficient time for review and continued approval before the expiration date of May 1, 2015.

To renew this project or make a modification, please see the IRBNet User Manual on our website at usi.edu/ospra for step-by-step instructions on submitting the Continuing Review or Modification Form.

If you have any questions, please contact us at 812-228-5149 or rcr@usi.edu.

Please include your project title and reference number in all correspondence with this committee.

Signature Redacted

Dr. Katherine A. Draughon
Executive Director - OSPRA

This letter has been electronically signed in accordance with all applicable regulations, and a copy is retained within The Office of Sponsored Projects and Research Administration's records.

Appendix H

Simulation Scenarios

Simulation Design Template

Date: 5/30/14
File Name: Post-op Bleeding
Discipline: NRS 250P Medical/Surgical
Student Level: Sophomore
Expected Simulation Run Time: 10-15 min.
Guided Reflection Time: 45-60 min.
Location: Simulation Lab
Location for Reflection: Sim Lab

Admission Date: 5/30/14 Today's Date: 5/30/14 Brief Description of Client Name: Jeff G. Gender: M Age: 65 Race: Caucasian Weight: 235 lbs. Height: 6ft 1 in. Religion: None Major Support: daughter Phone: 555-0987 Allergies: Penicillin; shellfish Immunizations: Up to date Attending Physician/Team: Dr. Hawkeye Past Medical History: Hypertension, MVA in 2008 resulting in a fractured right hip, history of deep vein thrombosis History of Present illness: Cleaning gutters on roof and fell approx. 10 feet. Alert and oriented x3. Abdominal trauma occurred. Social History: 65 year old widowed male. Daughter is support person. Lives alone. Works as carpenter. Former smoker (1 ppd) but quit 5 years ago. Drinks "2 or 3" beers each night after work. Enjoys golfing and swimming.	Psychomotor Skills Required Prior to Simulation Patient assessment, Vital signs Cognitive Activities Required prior to Simulation [i.e. independent reading (R), video review (V), computer simulations (CS), lecture (L)] L-material in NRS 250 perioperative lecture

Primary Medical Diagnosis: Abdominal trauma due to blunt force Surgeries/Procedures & Dates: Exploratory laparotomy under general anesthesia. Repair done to bleeding veins. Nursing Diagnoses: Ineffective tissue perfusion R/T blood loss and hypotension	

Simulation Learning Objectives

1. Identify signs and symptoms of possible hemorrhage

2. Identify patient risks for possible hemorrhage

3. Assess patient (including vital signs)

4. Communicate with patient

5. Communicate with health team members

Fidelity (choose all that apply to this simulation)

Setting/Environment
- ☐ ER
- ☐ Med-Surg
- ☐ Peds
- ☐ ICU
- ☒ OR / PACU
- ☐ Women's Center
- ☐ Behavioral Health
- ☐ Home Health
- ☐ Pre-Hospital
- ☐ Other:

Simulator Manikin/s Needed: X
male
Props: x

Equipment attached to manikin:
- ☒ IV tubing with primary line D5LR fluids running at 125 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 2Liters
- ☐ Monitor attached
- ☒ ID band
- ☐ Other:

Equipment available in room
- ☐ Bedpan/Urinal
- ☐ Foley kit
- ☐ Straight Catheter Kit
- ☒ Incentive Spirometer
- ☐ Fluids
- ☐ IV start kit
- ☐ IV tubing
- ☐ IVPB Tubing
- ☒ IV Pump
- ☐ Feeding Pump
- ☐ Pressure Bag
- x ☐ 02 delivery device (type) face mask
- ☐ Crash cart with airway devices and emergency medications

Medications and Fluids
- ☒ IV Fluids: D5LR
- ☐ Oral Meds:
- ☐ IVPB:
- ☐ IV Push:
- ☐ IM or SC:

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

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:

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

☐ Defibrillator/Pacer ☐ Suction ☐ 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: Significant Lab Values: CBC- HCT-10; Hgb-3.3; Plt.-200,000 Physician Orders: Admit to 4W Vital signs q 4 hours x 24 hours; then q shift CBC in am Clear liquid diet Up to chair TID May ambulate If unable to void, bladder scan; if more than 500ml. , straight cath x 1; if unable to void more than once, insert indwelling Foley catheter Heparin 5000units sub cut q am Morphine 4mg IVP q 2-4 hours prn pain Keflex 1 gram IVPB in RR x 1 Multivitamin 1 po q am Prazosin (Minipress) 1mg po daily Ducolax suppository 1 per rectum prn	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: Report Students Will Receive Before Simulation Time: 1 hour post-op Patient came to the hospital per ambulance after falling from ladder and having abdominal trauma. Abdominal laparotomy performed to ligate a bleeding vein. Patient had general anesthesia and is still groggy. However, patient is able to answer questions appropriately. Urinated 450ml clear yellow urine prior to surgery. Color pink, cap refill less than 3 seconds. Had DVT with a previous hospitalization. Had one dose of antibiotics in RR. Prior to surgery vs: T-97.8, P-92, R-16, B/P 156/88 VS 15 minutes ago: T-98, P-100, R-18, B/P-144/78 Abdominal dressing dry and intact

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

Lewis, S., Dirksen, S., Heitkemper, M., & Bucher, L. (2014). Medical-Surgical Nursing: Assessment and Management of Clinical Problems (9th edition). St. Louis: MO. Elsevier Mosby. pp. 318-323; 355-358.

Scenario Progression Outline

Timing (approximate)	Manikin Actions	Expected Interventions	May Use the Following Cues
5-7 minutes	B/P decreases, P increases, patient becomes confused	Student takes vital signs Checks dressing during assessment; communicates with patient	Role member providing cue: daughter Cue: "My father seems like he doesn't know where he is".
7-10 minutes	B/P decreases, P increase, RR increases, Pulse ox decreases	Student begins O2 per face mask; communicates with patient; contacts Dr. Hawkeye	Role member providing cue: daughter Cue: "Should he be seen by somebody?"

Simulation Design Template

Date: 5/30/14
Discipline: Maternal-Child/360P
Expected Simulation Run Time: 10- 15 min.
Location: Simulation Lab

File Name: OB/PPH
Student Level: Junior
Guided Reflection Time: 45-60min
Location for Reflection: Simulation Lab

Admission Date: 5/30/14 Today's Date: 5/30/14 Brief Description of Client Name: Heather S. Gender: F Age: 35 Race: Caucasian Weight: 200lbs Height: 5ft 3 1/2 inches Religion: P Major Support: Husband Phone: 555-1234 Allergies: NKDA Immunizations: up to date Attending Physician/Team: Dr. B. Casey Past Medical History: history of preterm delivery and preeclampsia with previous delivery History of Present illness: G3/T1/P1/AB0/L2 Social History: nonsmoker, nondrinker BA degree, works as bank teller, married for 15 years Primary Medical Diagnosis: Vaginal delivery of 9lb. 8oz baby boy @ 39 weeks gestation Apgars 7/9 Surgeries/Procedures & Dates: current- vaginal delivery with a midline episiotomy; epidural anesthesia; 2010- spontaneous vaginal delivery of preterm 5lb. female, Apgars 6/8; 2008-forcep	Psychomotor Skills Required Prior to Simulation Take vital signs, postpartum assessment Cognitive Activities Required prior to Simulation [i.e. independent reading (R), video review (V), computer simulations (CS), lecture (L)] R-postpartum hemorrhage article and textbook information L

delivery of term 7lb. 8oz. term male, Apgars 8/8 Nursing Diagnoses: Deficient fluid volume r/t blood loss secondary to uterine atony	

Simulation Learning Objectives

1. Identify signs and symptoms of postpartum hemorrhage

2. Prioritize care of patient with hemorrhage

3. Perform interventions regarding postpartum hemorrhage

4. Recognize risk factors for postpartum hemorrhage

5. Perform a postpartum assessment

6. Communicate effectively with the patient and husband

7. Communicate effectively with healthcare team members

Fidelity (choose all that apply to this simulation)

Setting/Environment ☐ ER ☐ Med-Surg ☐ Peds ☐ ICU ☐ OR / PACU ☒ Women's Center ☐ Behavioral Health ☐ Home Health ☐ Pre-Hospital ☐ Other: Simulator Manikin/s Needed: X Female postpartum Props: Equipment attached to manikin: ☒ IV tubing with primary line LR fluids running at 125 mL/hr ☐ Secondary IV line running at mL/hr ☒ IV pump ☐ Foley catheter mL output	Medications and Fluids ☒ IV Fluids: LR with 10U Pitocin ☒ Oral Meds: Methergine 0.2mg ☐ IVPB: ☐ IV Push: ☐ IM or SC: Diagnostics Available ☐ Labs ☐ X-rays (Images) ☐ 12-Lead EKG ☒ Other: CBC Documentation Forms ☒ Physician Orders ☐ Admit Orders ☐ Flow sheet ☒ Medication Administration Record ☐ Kardex ☐ Graphic Record ☒ Shift Assessment ☐ Triage Forms ☐ Code Record

☐ PCA pump running ☐ IVPB with running at mL/hr ☒ 02 mask available ☐ Monitor attached ☒ ID band ☐ Other: Equipment available in room ☐ 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) mask ☐ Crash cart with airway devices and emergency medications ☐ Defibrillator/Pacer ☐ Suction ☐ Other:	☐ Anesthesia / PACU Record ☒ Standing (Protocol) Orders ☐ Transfer Orders ☐ Other: Recommended Mode for Simulation (i.e. manual, programmed, etc.) programmed
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:	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: Report Students Will Receive Before Simulation Time: shift change Delivered 9lb. 8oz. term male infant three hours ago. Labor was slow so she received Pitocin augmentation. Baby was OP. Pushed for 3 hours. Breastfed immediately after

Important Information Related to Roles: Family members are patient's husband and/or patient's mother Significant Lab Values: Hgb-8.8 HCT-39 PLT.-350 Physician Orders: D/C IV when present bottle infused May eat regular diet VS. q 4 x 24 hours, then q shift Straight cath PRN Ice to perineum X 24 hours Ambulate ad lib Methergine 0.4mg IM x 1 for heavy bleeding Tylenol #3, 2 tabs q 4-6 hrs. prn pain Ibuprofen 600mg q 6 hrs. prn cramping Prenatal vitamin 1 po q day	delivery. Fourth degree Midline episiotomy-intact but bruised. Lost approx. 500ml blood. Was straight cathed before delivery but has not voided since. U/U F, LRL with mod. Clots, T-99. P-98, B/P 110/60, R-18.

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

Davidson, M., London, M., & Ladewig, P. (2011). Old's maternal newborn nursing and women's health across the lifespan (9th ed.). Upper Saddle River, NJ: Pearson Prentice Hall, pp. 744-745, 1159-1163.

MacMullen, N., Dulski, L., & Meagher, B. (2005). Red alert: Perinatal hemorrhage. MCN, 30 (1), pp. 46-51.

Scenario Progression Outline

Timing (approximate)	Manikin Actions	Expected Interventions	May Use the Following Cues
5-7 minutes	B/P decreasing, P increasing (large amount of blood on Chux); uterus boggy	Assessment of patient including VS, fundal massage	Role member providing cue: Patient Cue: "I feel dizzy."
7-15 minutes	B/P decreasing, P increasing , patient anxious, uterus boggy	Ongoing assessment of patient and VS; fundal massage, check orders, administer medications; call healthcare provider	Role member providing cue: Patient Cue: "I really don't feel good. I think I might pass out."

Debriefing/Guided Reflection Questions for This Simulation

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. To Observer: Could the nurses have handled any aspects of the simulation differently?
7. If you were able to do this again, how could you have handled the situation differently?
8. What did the group do well?
9. What did the team feel was the primary nursing diagnosis?
10. What were the key assessments and interventions?
11. 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

Patient has cervical laceration rather than boggy uterus
Patient had preterm labor and received magnesium sulfate
Patient had pre-eclampsia/eclampsia
Patient has abruptio placentae

Date: 5/30/14
Discipline: med-surg 429L
Expected Simulation Run Time: 10-15 min.
Location: Simulation lab

File Name: Post cardiac cath Hemorhage
Student Level: Senior
Guided Reflection Time: 45-60 min.
Location for Reflection: Sim lab

Admission Date:5/30/14 Today's Date: 5/30/14 Brief Description of Client Name: Donald D. Gender: M Age: 85 Race: African American Weight: 245 lbs. Height: 5 ft. 10 inches Religion: P Major Support: Adult son, Louis Phone: 555-4578 Allergies: seasonal allergies Immunizations: Up to date Attending Physician/Team: Dr. Kildare Past Medical History: Type II diabetic, hypertension, angina History of Present illness: Complained of chest pain unrelieved by nitroglycerin; pain more intense than what usually is experienced and did not go away with rest Social History: retired college English professor, widowed 2 years ago, non-smoker; non-drinker; denies non-prescription drug use; active in church; lives in assisted care facility Primary Medical Diagnosis: CAD with angina Surgeries/Procedures & Dates: Cardiac catheterization Nursing Diagnoses: Hemorrhage R/T surgical trauma to blood vessels	Psychomotor Skills Required Prior to Simulation Patient assessment; vital signs Cognitive Activities Required prior to Simulation [i.e. independent reading (R), video review (V), computer simulations (CS), lecture (L)] Lecture

Simulation Learning Objectives

1. Identify post cardiac cath hemorrhage.

2. Assess patient including vital signs.

3. Prioritize care for patient with post cardiac cath hemorrhage.

4. Communicate with patient in a therapeutic manner.

5. Communicate with other health care team members.

Fidelity (choose all that apply to this simulation)

Setting/Environment ☐ ER ☒ Med-Surg ☐ Peds ☐ ICU ☐ OR / PACU ☐ Women's Center ☐ Behavioral Health ☐ Home Health ☐ Pre-Hospital ☐ Other: Simulator Manikin/s Needed: X Male Props: Equipment attached to manikin: ☒ IV tubing with primary line LR fluids running at 125 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 ☐ Other: Equipment available in room	Medications and Fluids ☒ IV Fluids: LR ☐ Oral Meds: ☐ 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: Recommended Mode for Simulation (i.e. manual, programmed, etc.) manual

☒ 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) face mask ☒ Crash cart with airway devices and emergency medications ☐ Defibrillator/Pacer ☐ Suction ☒ Other: sandbag or pressure device	
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: Significant Lab Values: Lab values within normal limits Physician Orders: Vital signs q 15 minutes X 1 hour and then q 1	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: Report Students Will Receive Before Simulation Time: shift change Donald D. experienced unrelieved chest pain at his home this morning. He was transported to the hospital and had a cardiac catheterization. He returned to the hospital med-surg unit 15 minutes ago. Nothing was found on the cath. VS-132/84; P-80; R-22 T-97.9. IV #2 LR infusing is Right arm with 250 left. Pressure dressing is intact to the right femoral artery area. The dressing is dry and intact. Another assessment is due in 15 minutes.

hour for first 4 hours then q 4 hours Pressure dressing to remain in place until removed by MD Strict bedrest Full diet IV LR 1000ml @ 125/hr. D/C after current bottle infuses if there is no nausea Notify MD if patient complains of chest pain Stat ECG if patient complains of chest pain furosemide 20 mg. po q am Nifedipine 10 mg po TID	

Evidence-Based Practice Guidelines, Protocols, or Algorithms Used For This Scenario:

Lewis, S., Dirksen, S., Heitkemper, M., & Bucher, L. (2014). Medical-Surgical Nursing: Assessment and Management of Clinical Problems (9th ed.). St. Louis: MO. Elsevier Mosby pp. 699-703, 706-707, 745-746.

Scenario Progression Outline

Timing (approximate)	Manikin Actions	Expected Interventions	May Use the Following Cues
5-7 minutes	Increased pulse rate, decreased B/P, change in orientation; decreasing pulse ox	Assessment including VS Apply manual pressure to site; prioritize care; notify MD	Role member providing cue: Patient Cue: "I feel so nauseated."
7-10 minutes	Increased pulse rate, decreased B/P, change in orientation; decreasing pulse ox	Continue to assess and apply pressure to site; continue priority actions	Role member providing cue: Patient Cue: "Am I dying?"

Debriefing/Guided Reflection Questions for This Simulation:

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. To Observer: Could the nurses have handled any aspects of the simulation differently?

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

8. What did the group do well?

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

10. What were the key assessments and interventions?

11. 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

Patient is hypoglycemic.
Patient attempts to get out of bed and falls.
Patient is combative.
Patient is non-responsive.

Appendix I

Marketing Plan

Stakeholders	Message	Means of Dissemination	Timeline	Cost
Administrators in college (Dean, Chair, and BSN Director)	Explanation of capstone project and expected value to the college	Personal meetings, emails, faculty meetings	May 2014	N/A
Faculty (Didactic instructors)	Inclusion of hemorrhage simulation in course syllabus	Course instructor meeting Email	December 2014	N/A
Students in 2nd, 3rd, and 5th semesters	Dates of simulation	Blackboard learning platform And course syllabi and content	November 2014 for seniors & juniors experience March 2015 for sophomore experience	N/A N/A

Appendix J

Capstone Project Timeline

Task	Estimated Completion Date	Actual Completion Date
Overview of project to NKU – Meet with simulation coordinator and faculty in classes that would be involved in simulation	03/31/14	03/31/14
Final Approval of Project Plan and Problem Statement	05/30/14	
Meet with Burkhardt Center to review measurement tool and project	10/01/14	09/15/14
Develop safety simulations	6/15/14	07/15/14
Apply for IRB approval of project at NKU & USI	5/30/14	
Safety simulation performed by junior and senior students in Fall 2014	TBA	November 2014
HESI test(s) administered to junior and senior students in Fall 2014 semester of the nursing program	Fall 2014--TBA based upon course content calendar	December 5th, 2014

Safety simulation performed by sophomore students in Spring 2015 semester	TBA	February 2015
HESI administered to sophomore students in Spring 15 semester	TBA	March 16th, 2015
Data analysis through Burkhardt Consulting Center	May-July 2015	June 2015
Poster presentation at USI	April 2015	April 2015
Podium Presentation at USI	April 13, 2016	April 13, 2016
Submit manuscript to	3/2016	3/2016

Appendix K

Capstone Project Financial Plan

	Budget Amount	In Kind	Source of Funding	Total Cost Semester 1 Fall 2014	Total Cost Semester 2 Spring 2015
Personnel					
Primary Investigator 20 hours per semester in simulation laboratory	31.25 x 20=$625.00 $625.00 x .30=187.50	In Kind	Northern Kentucky University (NKU)	$812.50	$812.50
Simulation Lab coordinator 2 hours a day x 3 days	31.25 x 6 = $187.50 $187.50 x .30= $56.25	In Kind	NKU	$243.75	$243.75
Six teaching faculty 1.5 hours x 1 day	31.25x 1.5=$46.88 $46.88 x 6=$281.28 $281.28 x .30= $84.38	In Kind	NKU	$365.66	$243.78
Four teaching faculty	31.25 x 1.5=	In Kind	NKU		
Materials					
Printing paper Ink jet	$0	In Kind	NKU	$0	$0
Consent Forms (0.375 per copy)	120 x .04=$4.80		Primary Investigator	$2.40	$2.40
HESI testing	$100. 00 x 180= $18,000		Student Fees	$12,000 (120 students)	$6,000 (60 students)

<u>Equipment</u> High Fidelity Human Simulators Room space and utilities	 $0 $0	In Kind In Kind	NKU NKU	$0 $0	$0 $0
<u>Publicity/Marketing</u>	Blackboard postings, faculty meetings	In Kind	NKU Project Planner	$0	$0
<u>Evaluation</u> Use of Burkhardt Center for data evaluation Data Evaluation by Primary Investigator	 $40.00/hour $31.25 x 30=$937.50 937.50 x .30=281.25 Total=$1218.75	 3 hours in kind ($120.00)	 NKU NKU	 $0	 $80.00 $1218.75
<u>Dissemination</u> Presentation at the INACSL conference	Registration- $500.00 Travel- $500.00 Accommodations- $500.00 Total- $1500.00		Primary Investigator	$0	$1500.00

Appendix L

Capstone Evaluation Plan

Objective	Measures	Indicator	Data Source	Timeline
Long-term: Increase nursing students critical thinking skills regarding patient safety by initiating patient safety simulation throughout the nursing program	Critical thinking skills of nursing students regarding patient safety are improved	Evidence of increased critical thinking skills on standardized testing (at least a 2% increase in HESI critical thinking scores)	HESI exams E2 and V-2 QSEN patient safety critical thinking sub-scores	Fall 14/Spring 2015
Short term: Development of patient safety scenarios	Develop patient safety simulation scenarios	Simulation	Student learning outcomes developed	July 2014
Short term: Implementation of simulation	Implementation of patient safety simulations	Simulations	Student participation in simulations	Fall Semester 2014: Spring semester 2015

Appendix M

Permission to Use Survey Instrument

NLN Instrument Request
Amy McGuire [amcguire@nln.org]

Sent: Monday, March 24, 2014 2:11 PM
To: Deb Engel
Attachments: ; Instrument 1_Educational P~1.pdf (19 KB)[Open as Web Page]; Instrument 2_Satisfaction ~1.pdf (28 KB)[Open as Web Page]; Instrument 3_Simulation De~1.pdf (20 KB)[Open as Web Page]

Dear Deborah,

Thank you for your request.

It is my pleasure to grant you permission to use the "Educational Practices Questionnaire," "Simulation Design Scale" and "Student Satisfaction and Self-Confidence in Learning" NLN/Laerdal Research Tools (I typically send all 3 at the same time, so you don't have to make another request).

In granting permission to use the instruments, it is understood that the following caveats will be respected:

1. It is the sole responsibility of (you) the researcher to determine whether the NLN questionnaire is appropriate to her or his particular study.
2. Modifications to a survey may affect the reliability and/or validity of results. Any modifications made to a survey are the sole responsibility of the researcher.
3. When published or printed, any research findings produced using an NLN survey must be properly cited. If the content of the NLN survey was modified in any way, this must also be clearly indicated in the text, footnotes and endnotes of all materials where findings are published or printed.

I am pleased that material developed by the National League for Nursing is seen as valuable as you evaluate ways to enhance learning, and I am pleased that we are able to grant permission for use of the "Educational Practices Questionnaire," "Simulation Design Scale" and "Student Satisfaction and Self-Confidence in Learning" instruments.

Warm Regards, Amy

Amy McGuire | Administrative Coordinator, NLN Chamberlain Center | National League for Nursing | www.nln.org | amcguire@nln.org | Tel: 202-909-2509 | The Watergate | 2600 Virginia Avenue NW, 8th Fl, Washington, DC 20037

Appendix N

Student Satisfaction and Self-Confidence in Learning

Survey

Student Satisfaction and Self-Confidence in Learning

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

Mark:
1 = STRONGLY DISAGREE with the statement
2 = DISAGREE with the statement
3 = UNDECIDED - you neither agree or disagree with the statement
4 = AGREE with the statement
5 = STRONGLY AGREE with the statement

Satisfaction with Current Learning	SD	D	UN	A	SA
1. The teaching methods used in this simulation were helpful and effective.	O 1	O 2	O 3	O 4	O 5
2. The simulation provided me with a variety of learning materials and activities to promote my learning the medical surgical curriculum.	O 1	O 2	O 3	O 4	O 5
3. I enjoyed how my instructor taught the simulation.	O 1	O 2	O 3	O 4	O 5
4. The teaching materials used in this simulation were motivating and helped me to learn.	O 1	O 2	O 3	O 4	O 5
5. The way my instructor(s) taught the simulation was suitable to the way I learn.	O 1	O 2	O 3	O 4	O 5
Self-confidence in Learning	**SD**	**D**	**UN**	**A**	**SA**
6. I am confident that I am mastering the content of the simulation activity that my instructors presented to me.	O 1	O 2	O 3	O 4	O 5
7. I am confident that this simulation covered critical content necessary for the mastery of medical surgical curriculum.	O 1	O 2	O 3	O 4	O 5
8. I am confident that I am developing the skills and obtaining the required knowledge from this simulation to perform necessary tasks in a clinical setting	O 1	O 2	O 3	O 4	O 5
9. My instructors used helpful resources to teach the simulation.	O 1	O 2	O 3	O 4	O 5
10. It is my responsibility as the student to learn what I need to know from this simulation activity.	O 1	O 2	O 3	O 4	O 5
11. I know how to get help when I do not understand the concepts covered in the simulation.	O 1	O 2	O 3	O 4	O 5
12. I know how to use simulation activities to learn critical aspects of these skills.	O 1	O 2	O 3	O 4	O 5
13. It is the instructor's responsibility to tell me what I need to learn of the simulation activity content during class time..	O 1	O 2	O 3	O 4	O 5

 Revised December 22, 2004