EVALUATION METHODS USED IN SIMULATION: A SURVEY OF FACULTY AND STUDENT PERCEPTIONS IN AN UNDERGRADUATE NURSING PROGRAM

by

Susan Harrison Kelly

BSN, University of Pittsburgh, 1999

MSN, Robert Morris University, 2008

Submitted to the Graduate Faculty of

the School of Education in partial fulfillment

of the requirements for the degree of

Doctor of Education

University of Pittsburgh

2014

UNIVERSITY OF PITTSBURGH

SCHOOL OF EDUCATION

This dissertation was presented

by

Susan Harrison Kelly

It was defended on

October 17, 2014

and approved by

William E. Bickel, PhD, Professor, Administrative and Policy Studies

Stewart Sutin, PhD, Clinical Professor, Administrative and Policy Studies

Gretchen Eileen Zewe, PhD, Assistant Professor, School of Nursing

Dissertation Advisor: Mary Margaret Kerr, EdD, Professor, Administrative and Policy Studies

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Susan H. Kelly, EdD

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The history of using simulation in health care is directly related to evolving technology. For decades, nursing schools had always instructed students using static or low fidelity simulation. The pedagogical approach was to teach students the skills necessary to care for patients in the acute care setting. While an effective method of teaching, the introduction of new technology gave schools another pedagogical approach to teach students.

The complexity of training new nurses has led to schools of nursing incorporating various forms of high-fidelity simulation into the nursing curriculum. Students entering schools of nursing expect simulation to be utilized in the programs. However, the literature has found nursing faculty have a discomfort and a lack of knowledge with implementing simulation into the curricula.

The health care arena is changing and schools of nursing are faced with the challenges to effectively educate future nurses for a sophisticated workforce. Schools need to train nursing students to have the skills to critically think through complex situations. However, a larger corollary will be to have nursing faculty who are properly educated to initiate simulation and use it in the nursing programs.

The development of faculty to effectively utilize simulation has been documented in the literature. As a pedagogical approach, nursing faculty find that to incorporate simulation takes more time and preparation as opposed to traditional methods of teaching.

Nursing schools have obstacles to overcome if they want to effectively use simulation in their curricula. The need for valid and reliable instruments to evaluate students' needs to be considered as simulation is embedded into the nursing curriculum. Training faculty on how to design and develop scenarios, properly evaluate student performance, and learn the technology will be imperative to have successful student outcomes.

The purpose of this study is to compare student and faculty perceptions of using simulation in an undergraduate nursing course. The findings will assist the researcher to develop an effective program to train nursing instructors in evaluating student outcomes using simulation.

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ACKNOWLEDGMENTS

I wish to express my appreciation to my committee members for their guidance, patience, and support on my journey to complete this dissertation.

Dr. Mary Margaret Kerr, as my research advisor, I want to thank you for your constant support, keen insight, and good nature, which made this a seamless endeavor. Dr. William Bickel, thank you for your expertise and support throughout my course work and toward completion of my dissertation. Dr. Stewart Sutin, you have been with me from the beginning. Your kindness, support, and friendship will always be cherished. Dr. Gretchen Zewe, as my mentor and friend, you have guided me and kept me from veering off the road as I worked to complete this dissertation. I believe I could not have had a better dissertation committee and I am eternally grateful to you all.

I would like to thank Dr. Thomas Zullo for his statistical analysis for which much of this would not have been possible. I have to thank my colleagues in the Acute/Tertiary Care Department in the School of Nursing. Your support, patience, and friendship were very important to me as I completed this journey.

I have to thank my dear collegial friends who unfailingly supported me. I do not know if I could have made it through some of the grueling semesters without your support and guidance. To my dear friend Stephanie, we were supposed to do this together, but I know your spirit was always with me.

Most of all, I have to thank my mom Jeannette Pike and sister Karen Behling, for never doubting me, putting up with me, and loving me every step of the way.

Lastly, I would not be here if it were not for my husband Matt and my daughter Arianna. My husband is my rock and my biggest supporter. My daughter whose sense of wonderment and vivacious laughter kept me grounded. I cannot thank the two of you enough for your love and encouragement—you are the best.

To all of you, thank you for guiding me and keeping me focused as I completed this journey. This dissertation is dedicated to all of you.

1.0 INTRODUCTION: THE PROBLEM

Nursing education was built on a foundation of comprehensive didactic instruction and enriching clinical experiences. Nursing instructors taught various skills to students in a lab setting, using various methods of instruction. However, technological advancements have given way to new pedagogies to enhance the clinical experiences of a nursing education. The proliferation of high-fidelity simulation into the nursing curriculum has added many challenges for faculty. Although embraced by a technology-savvy generation of students, different generations of faculty do not always share the same comfort levels for these advancements.

High-fidelity simulation uses sophisticated, state-of-the-art mannequins integrated with computerized software to simulate real-life patient scenarios. In health care, it is used as an adjunct to learning skills, critical thinking, and handling emergent situations. The purpose of simulation is to provide students with "the artificial replication of the real world situation . . . in order to gain knowledge and psychomotor skills to be able to critically think through complex scenarios in a safe and non-threatening environment" (Cumo, Kress, & Lewental, 2009, p. 131).

The hallmark of a nursing student's clinical education takes place in an acute care setting but the population of patients may be limited because of census or specialty within the health care facility. Relying solely on hospital admissions can potentially limit students in developing the analytical skills to problem-solve during a crisis. The impending nursing shortage and less orientation time for new nurses have placed the demand on schools of nursing to prepare student

nurses to the complexities of the workplace. The challenges facing faculty are how to implement simulation and measure effective student outcomes (Jeffries, 2005).

The ability to learn in a controlled environment with constructive feedback is essential in this learning environment. Faculty members require valid instruments and structured training to implement and effectively evaluate student performance. Simulation can increase opportunities to train nursing students who will be ready to provide safe and competent care to their patients. However, the literature does not reveal a comparison of faculty and student perceptions in the evaluation process.

The Commission on the Collegiate on Nursing Education (CCNE) is the accrediting body of the American Association of Colleges of Nurses (AACN). Nursing schools that offer the Bachelor of Science in nursing (BSN) must adhere to the AACN, *Essentials of Baccalaureate Education for Nursing Practice* (AACN, 2014). Schools of nursing need to follow the guidelines established in fulfilling their mission.

The voluntary, self-regulatory body supports and encourages continuing self-assessment of nursing programs. In the standards outlined by the CCNE, the nursing curriculum is developed in accordance with the program's mission, goals, and expected student outcomes. The standards also address that teaching-learning practices be congruent and that the environment foster achievement of the expected student outcomes (AACN, 2014).

Currently, the AACN does not require specific hours for simulation. However, as the body of research continues to grow in support of simulation, the AACN will need to be proactive in its approach to nursing schools.

The *Essentials of Baccalaureate Education for Nursing Practice* (AACN, 2014) document serves to transform baccalaureate nursing education by providing the nursing

curriculum elements and framework for building the baccalaureate curricula for the 21st century (AACN, 2014). A major component of the document is the essential of quality care and patient safety. The *Essentials* stipulate that the "graduate implements safety principles and works with others on the interprofessional health care team to create a safe, caring environment for care delivery" (AACN, 2014).

The standards to provide safe and effective care to all patients will be the benchmark of utilizing high-fidelity simulation within nursing programs. A report by the Joint Commission Journal on *Quality and Patient Safety* (2014) discusses eight critical factors to implementing successful simulation programs. The article states the importance of successful simulation programs and states training as a key in the development of successful programs because it sustains cognitive and behavioral changes (p. 21).

Simulation needs to be well established to develop the clinical aspects closely relating to the hospital experience. The situations are designed to be more real allowing the student to use critical thinking skills to learn from the situation. Clinical instructors need to be aware of this higher level of thinking to consistently evaluate student outcomes. In accordance with the university mission, instructors are required to provide a high-quality undergraduate education (University of Pittsburgh School of Nursing, 2008). The essential training of these faculty members to seamlessly initiate simulation as pedagogy into the nursing curriculum will be imperative.

Chickering and Gamson (1987) suggest that there are seven principles of a good undergraduate education; "Faculty need to communicate high expectations; encourage active learning; encourage contact between faculty and students; develop reciprocity and cooperation

among students; give prompt feedback; emphasizes time on task; and respect diverse talents and ways of learning" (p. 1).

These are key factors to allow a more systematic approach to simulation and to have the opportunity for significant positive outcomes.

As outlined by INACSL in its *Standards of Best Practice: Simulation Standard V* these principles can apply to the methods of instruction used in simulation (Boese, et al., 2013). The best practice model outlines the criterion needed for effective facilitator participation in simulation. Key components of the model are needed to build a foundation in educating faculty in implementing effective evaluation techniques (Boese, 2013).

The CCNE has set standards for successful student outcomes in a baccalaureate program. The university has established its mission to provide a high-quality undergraduate education. It will be important to assist instructors with the many challenges to implement high-fidelity simulation into the core nursing curriculum. In an effort to continue with the high-quality standards and goals, it will be imperative to educate faculty members to use simulation as a pedagogical approach to learning.

1.1 KEY TERMS

For the purpose of this study, the following definitions will be utilized:

Acute care setting: short-term (approximately 30 days) inpatient care or emergency services or other 24-hour urgent care settings. This is usually in a hospital.

Assistant professor: a teacher in a college or university who is above the rank of instructor and below the rank of an associate professor.

Faculty: the teaching and administrative staff and those members of the administration having academic rank in an educational institution.

High-fidelity simulation: structured student learning experiences with the use of a technologically advanced computerized mannequin.

Human Patient Simulator (HPS): HPS is anatomically precise and reproduces physiologic responses.

Instructor: person who teaches a subject or skill; someone who instructs people, a teacher in a college or university who is not a professor.

International Nursing Association for Clinical Simulation and Learning (INACSL): supports the work of global simulation educators and facilitators for both the practice setting and academia in nursing and health care.

Joint Commission: is an independent, not-for-profit group in the United States that administers accreditation programs for hospitals and other health care-related organizations.

Laerdal Medical: is dedicated to helping save lives with products for cardio-pulmonary resuscitation training, airway management, advanced life support training, spinal motion restriction, trauma training, monitoring, defibrillation, and patient simulation made for using

traditional basic, intermediate, and advanced training techniques combined with microsimulation and virtual reality.

Primary teacher: a nursing instructor who is the lead teacher for an undergraduate course.

Simulation scenarios: scenarios designed to be emergent to elicit critical thinking skills of the student.

1.2 PURPOSE

The purpose of this study was to improve the delivery of high-fidelity simulation in an undergraduate nursing program at a large academic university located in the mid-Atlantic region. The study addressed evaluation methods used to test undergraduate students in a baccalaureate nursing program, in order to provide consistent delivery of this method of instruction.

Evaluating students in what is considered a high-stress; anxiety-ridden environment has been met with some controversy. Students, who embrace the technology, become wary when faced with the process of testing with a nursing instructor. Instructors, who embrace the idea of evaluating students on handling emergent situations, balk at the process of playing multiple roles within the testing scenario. The instructor must manage the computer software, play the role of patient or physician or both, and evaluate the student. The process can overwhelm the instructor.

The literature provides studies on the uses of simulation, current instruments used to evaluate student performance, and recent studies on evaluation methods in simulation. Many health care disciplines, such as medicine and anesthesiology, have incorporated simulation and evaluation into the curricula; however, because of the processes involved, nursing has lagged in their development.

The study took place in a large academic university located in the mid-Atlantic region. The university has built simulation into the nursing curriculum, and within each level of the program, students spend time at a simulation center. The simulation center has state-of-the-art equipment used in teaching all disciplines of health care. Primary teachers for the undergraduate courses use simulation as a teaching tool. However, only the senior-semester students are evaluated using simulation. At this level, the students spend two weeks of a 15-week semester at the simulation center. The purpose of the first week is for the students to work through a variety of complex patient scenarios. The second week is used for evaluating student performance. The individual simulation scenario is a highly anticipated component of the course for students.

During the individual scenario, the instructor is in the room with the student to test his or her performance. The five-minute scenarios test the student's ability to critically think through an emergency situation. The course has not recently offered formal training in simulation to instructors and depends on availability of faculty for that particular semester. Unfortunately, this has led to fluctuations in reliability and consistency in evaluating students. This is an important component to the students learning, because experiences in the acute care setting can be diverse or nonexistent.

There have been studies to date that have identified issues related to evaluating students in simulation. However, researchers continue to investigate how simulation is delivered and evaluated. The aim of this study was to explore the perceptions of nursing faculty members and students in how simulation is taught and evaluated in an undergraduate nursing program.

The purpose of the study was to answer the following questions to assist in building a foundation of evaluation methods used in a senior-semester nursing course at a large research university.

1.3 RESEARCH QUESTIONS

1. How do faculty members perceive the value of using high-fidelity simulation in student learning?
2. How do faculty members rate their use of best practices during a simulation scenario?
3. How do nursing-faculty members view student outcomes during the simulation scenario?
4. What do faculty members view as the most and least interesting aspect of faculty development in teaching using simulation?
5. How do students perceive the value of using high-fidelity simulation in their learning?
6. Do nursing students perceive the faculty is adhering to the best-practice model when evaluating simulation scenarios?
7. Do nursing students perceive that they are able to transfer knowledge from the simulation scenarios to the clinical setting?
8. How do faculty members and students agree or disagree of faculty best practice and student outcomes using simulation?

2.0 LITERATURE REVIEW

2.1 THE EARLY USE OF SIMULATION

Early use of mannequins began in nursing education around 1911 with the use of static, low-fidelity simulation and the Chase Hospital Doll (Cordeau, 2012). Martha Chase, a doll maker in the early 1900s, was commissioned by the principal of the Hartford Connecticut Hospital Training School for Nurses to make an adult-sized mannequin incorporating the same characteristics of realism and durability as the play dolls. Over the years, the Chase doll business faded, but the use of mannequins in training nurses continued to grow (Herrmann, 2008).

In later years, the resuscitation Annie mannequins were used to teach CPR to health care professionals. Resusci Annie was a task trainer created for trainers by the Laerdal Company in the 1960s (Rosen, 2008). As stated by Rosen (2008), "this product was one of the most significant events of medical simulation" (p. 160). The mannequins were static and very easy to utilize by trainers. Students applying to nursing schools needed to have their CPR training completed for entry into the programs. The purpose of this training was to assist medical personnel to learn mouth-to-mouth breathing. The company instilled a springboard into the chest to allow for instruction in chest compressions for pulmonary resuscitation (Rosen, 2008).

Over the years, low-fidelity simulation was an integral part of a nursing student's core curriculum. Within a lab setting, students learned a variety of skills such as physical assessment,

insertion of a Foley catheter, and intravenous delivery of medications. The skills were taught using basic mannequins that were static. The mannequins did not have computer software to allow an instructor to program certain life-threatening situations (i.e., heart arrhythmias). The purpose was to allow the student to learn the skills necessary to practice nursing in a safe environment. It was not until the 1990s that simulation developed into higher levels of technological advancement (Rosen, 2008).

Nursing instructors were challenged with the added workload to learn this advanced technology. High-fidelity simulation required training in the software applications and course development around the new pedagogy. The low-fidelity training was very task oriented, and instructors needed to know only the correct procedures to evaluate students. Students were evaluated on the skill performed and the instructor evaluated students using a checklist of items that needed completed. The usage of high-fidelity simulation required instructors to assess students in a scenario, which required a higher level of evaluation. The evaluation process was more than just a check list of items, and new methods to evaluate students would begin to emerge.

Undergraduate programs have begun to use high-fidelity simulation and it has become an expected feature within the nursing curriculum. Nursing schools have evolved in their development of simulation within the nursing curriculum, although they have had their own hurdles to overcome in establishing simulation within their programs.

The cost of the simulation equipment can be a barrier to schools who are interested in implementing it into their programs. However, schools of nursing have used innovative methods to obtain simulation equipment. Nehring and Lashley (2004) reported from their survey of

nursing schools using simulation that many used grants or special allocations to purchase the equipment.

The National League of Nursing (NLN) is an organization that offers educational resources for the nursing profession. The NLN offers a grant program for schools wanting to implement simulation into their curriculum (The National League of Nursing, 2013). Large research universities with ties to other schools of health were usually better equipped with the resources to incorporate simulation across the curricula. Schools without ties to large universities will share resources with one another to offer simulation in their programs.

The literature mentions that the cost associated with simulation can be a barrier; however, "the *major* barrier to adopting simulation is the lack of trainers experienced to use it" (Alinier, Hunt, Gordon, 2004, p. 206). Many schools were elated to have the equipment, only to find that they struggled with the application and implementation processes.

Many mannequins stayed in boxes, unused because of a lack of application knowledge. These issues raised concerns about the processes involved in incorporating successful programs. The simulation packages are expensive, and purchasing unused equipment was a waste of funding. In turn, this led to schools hiring simulation experts to handle all areas of simulation implementation.

2.2 ADVANCEMENTS IN SIMULATION

Since that time, simulators have advanced to what is now called high-fidelity patient simulation. These simulators are controlled using advanced computer technology, which "simulates human physiological function and at times can include voice" (Cordeau, 2012, p. E90). The

convergence of minimally invasive surgical procedures and computer technology lent itself to the development of vast arrays of simulation software (Rosen, 2008).

An ultrasound simulation system was created in 1995 and was based on real U.S. patient data sets. The system replicated abdominal pathology to assist in educating those in obstetrics and gynecology. It was one of the first mannequins to include a course syllabus, instruction manuals, and case scenarios (Rosen, 2008).

However, anesthesia first introduced using mannequin-based simulation. David Gaba, MD, professor of anesthesiology, perioperative and pain management at Stanford School of Medicine, built the first Comprehensive Anesthesia Simulation Environment (CASE) prototype at Stanford University. Gaba is renowned in simulation, and his laboratory has continued its efforts to improve performance and address patient-safety issues (Stanford School of Medicine, 2013).

Based on Gaba's research, anesthesia and nurse anesthetist programs around the country have embedded simulation within their programs. These programs use state-of-the-art high-fidelity training for their students, and it is the gold standard for these programs. The continued efforts have worked into the development of comprehensive programs used in such disciplines as emergency medicine. Medicine has been slow to respond in implementing simulation within their programs. The research has been in support of using this as an adjunct to learning; however, not to replace patient interaction (Rosen, 2008).

Graduate nursing programs use high-fidelity and HPS to train nurse practitioners. Within the past decade, undergraduate nursing programs have studied and researched the importance of simulation within their programs.

Simulation continues to be in its infancy and much of the research in medicine has been in support of this pedagogical approach. Simulation is used as an adjunct to learning and can never fully replace patient interaction.

Although these advanced programs have developed evaluation methods to test students' ability to perform at high skill levels, undergraduate programs have just started evaluating performance. Comparing methods of evaluating students continues to be uncharted territory within undergraduate programs. The literature on evaluation methods used in simulation is within the past few years, and research in the correlation of student and faculty perceptions is close to nonexistent.

2.3 MULTIMETHOD STUDY IN SIMULATION

Pamela Jeffries, PhD, RN, professor and associate dean for academic affairs at Johns Hopkins University School of Nursing, is nationally known for her research and work in developing simulation in teaching (Johns Hopkins School of Nursing, 2013). In her book, *Simulation in nursing education: From conceptualization to evaluation (2007)*, she outlines the theoretical framework for successful simulation outcomes.

The framework is important because it focuses on learning as processing cognitive skills, experiential growth, pattern recognition, and sociocultural dialogue (p. 23). The framework allows for many different connections within and outside a sociocultural milieu (p. 23). This framework uses learner-centered practices, constructivism, and collaboration among individuals. When the learning is experiential, it allows for more-realistic tasks, allowing the learners more hands-on experience.

Figure 1. Jeffries Simulation Model

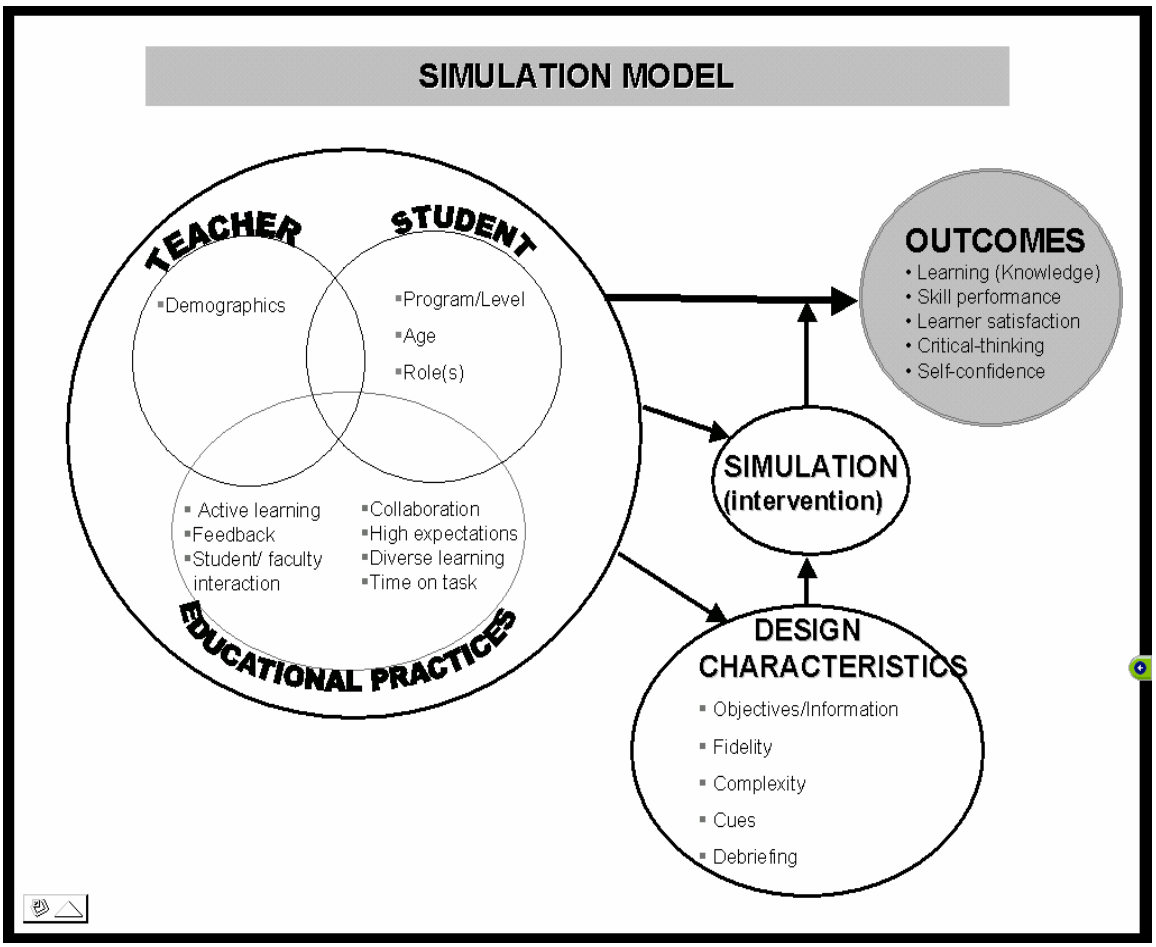

Figure 1 shows the teacher demographics as an important criterion with student program level, age, and the roles that are established during simulation. The educational practices are part of the teacher-student relationship. The design characteristics along with the intervention of simulation create the outcomes of learning, skill performance, learner satisfaction, critical thinking, and self-confidence. Adapted from "Simulation in Nursing Education: from Conceptualization to Evaluation," by Pamela R. Jeffries, p. 23. Copyright 2007 by the National League for Nursing.

Jeffries was the first nurse educator to define and outline effective methods to incorporate simulation into the nursing curriculum. In 2003, the NLN and Laerdal Medical conducted a national multimethod study using simulation in nursing education (NLN, 2006). The study was to enhance faculty knowledge in using simulation for student outcomes and learning.

The project was conducted from June 1, 2003, through May 31, 2006, and consisted of four phases. The first phase consisted of clarifying the purpose, reviewing the simulation literature, and applying for Internal Review Board (IRB) approval (NLN, 2006). The goals of the research were as follows:

1. Develop a teaching-learning framework incorporating simulations that nurse educators can use to help guide the development, implementation, and evaluation of the use of simulation in nursing education.
2. Describe and test a design that is theoretically based and can be used to develop nursing simulations that promote good learning outcomes.
3. Explore relationships among the theoretical concepts of the simulation framework to assess the existence and importance of these concepts.
4. Test and analyze selected outcomes when implementing a nursing simulation based on the proposed theoretical concepts using an experimental design (NLN, 2006).

The summary on educational practice was the importance of developing a simulation framework to provide quality learning for students (NLN, 2006). The research in this area provided information regarding the importance of feedback to students. The members of the NLN committee believe that when students are immersed in the learning situation and correct feedback is obtained from nursing instructors this process will facilitate better learning outcomes (NLN, 2006). The report concludes with the recommendation for further research for students to apply and synthesize knowledge in a nonthreatening environment (NLN, 2006).

Students immersed in a simulation scenario can become anxious, and all efforts should be used to provide a safe learning environment. However, the simulation needs to be related to a real-life acute care experience. The simulation allows the instructors to simulate patient scenarios

in a controlled environment, allowing consistent experiences to all students. The situations are designed to be more real allowing the student to use critical-thinking skills to learn from the scenario (Jeffries et al., 2011).

Students having consistent experiences can apply this knowledge to real experiences. The goal is to have the student critically think and use this knowledge when he or she is in the role as a professional nurse.

2.4 EVALUATION METHODS AND CONTROVERSY

The nursing profession has lagged behind in adopting evaluation methods in high-fidelity simulation. High-stakes evaluation is defined "as an evaluation process associated with a simulation activity, which has a major consequence or is the basis for a major grading decision, including pass-fail implications" (Bensfield, Olech, & Horsley, 2012, p. 71).

Controversy and debate surround how to test nurses for licensure or competency in the profession. Nursing continues to discuss the implications of assigning a grade to a simulation activity. Issues surrounding valid and reliable instruments and training faculty on how to evaluate and incorporate simulation into the nursing curriculum continue to be obstacles. However, as the need for highly skilled nurses entering the workforce continues to grow, ideas on how licensure will evolve have been found within the literature.

Currently, students take the state boards after graduating from an accredited nursing program. National Council of Licensure Examination for Registered Nurses (NCLEX-RN) is the test for all graduate nurses. It is a computerized multiple-choice test offered by the state of residence.

However, Jeffries states, “we are likely to see [in nursing] an increase in the use of simulation to measure progress toward programmatic goals and to measure competence for licensure, certification, or performance” (Jeffries, 2007). The National Council of State Boards of Nursing is considering clinical simulation as a future component of the NCLEX-RN.

Currently, the National Council of State Board of Nursing (NCSBN) does not require specific hours for simulation. However, “eight states allow no simulation as a substitute and four states specify that 20 to 25 percent of clinical hours may be replaced by simulation” (Hayden, Smiley, Gross, 2014, p. 25). Hayden, et al., (2014) suggests that more research is needed to determine requirements for implementing simulation hours into the curriculum.

The NLN does not recommend a passing score from students on simulation prior to graduation and believes that it could have potential negative effects for students (Bensfield et el., 2012). The recommendation has been for each student to take a simulation examination until he or she are successful and not rely on a pass or fail grade to graduate.

The NLN is currently conducting a study using the Creighton Simulation Evaluation Instrument (C-SEI™) to evaluate students in clinical simulation. As these studies become more prevalent, and the bar is raised on standards for nursing education, the process of evaluation methods in simulation could be an important component for all schools of nursing.

Lazzara, Benishek, Dietz, Salas, and Adrainsen (2014) have suggested, in an effort to reduce adverse events caused by human error, an effective mechanism of instruction is the use of simulation (p. 21). The report is based on eight critical factors to implementing successful simulation programs. The article states the importance of incorporating the science of training for maximum effectiveness. It is important to maintain the effectiveness and sustainability of the program with the right support, supplies, space, and staff (p. 27).

Faculty members have the added challenge of placing simulation into the nursing curriculum. Foronda (2013) states, “two decades have passed since the introduction of simulation in nursing education and many nurse educators continue to struggle with how to integrate simulation within the curriculum and maximize its usage” (p. e1).

Schools of nursing rely on part-time or adjunct faculty to teach in their clinical concentration areas. The quagmire is that simulation is most often used as required hours for clinical experiences and schools use part-time or adjunct clinical faculty to teach in the simulation lab. These instructors usually are not formally trained nor do they have experience to implement simulation scenarios.

In examining this issue, it has been found that faculty who coordinate the course will either postpone or eliminate simulation because they have only novice instructors. This inconsistency in how simulation is delivered throughout the nursing program can have a negative impact on student experiences, with inconsistencies in which students are receiving simulation and those who are not.

Faculty need to be allocated the resources and time to utilize this effective strategy. The faculty needs to be given release time and the educational resources to operate HPS. This time should be spent developing scenarios, writing the objectives, and pilot-testing the scenarios (Howard, Ross, Mitchell, & Nelson, 2010, p. 47).

In the quest to overcome barriers, such as realism, quality of the scenario, familiarity with the equipment, and the student’s preparedness, simulation should be introduced early in the academic program (Mikasa, Cicero, & Adamson, 2012, p. e2). The researchers also believe that it is important to match the theory and course content and use debriefing as a process of

evaluating the student performance. All of these aspects can contribute to incorporating simulation into the nursing curriculum (Mikasa et al., 2012).

2.5 DEVELOPING THEORY IN SIMULATION

High-fidelity simulation can be a very rewarding yet challenging endeavor for the nursing student. The literature has not linked faculty best practices to the process of evaluation methods used in simulation. However, Cordeau (2012) did a study asking two main questions to students regarding high-stakes evaluation: "What is the specific social psychological problem in high-stakes clinical simulation? What is the social psychological process used to cope with the problem" (p. E91)? These issues are important in evaluating student perceptions of evaluation methods and give insight into how the students perceive certain aspects of the process.

Cordeau (2012) used 30 students from a junior nursing program. The method of research was grounded theory and data collection involving formal and informational interviews, participant observation, and examination of relevant documents (Cordeau, 2012). One of the items presented was "please tell me what it was like to participate in a graded clinical simulation?" (Cordeau, 2012, p. E98). The grade was either "passes" or "needs improvement" and was not a pass or fail grade because students could pass on their second or third time (Cordeau, 2012).

The author did not contribute responses from the informational interviews concerning the question of participating in a graded clinical simulation. The responses from the interviews could assist instructors on the impact of grading students in simulation. The author did contribute part of the informational interview regarding the question of how students picture the

mannequin as a real patient, with the response from one student stating, “It’s a real scenario, but not a real patient” (Cordeau, 2012, p. E94). The author noted this as an insight into how some students view the simulation mannequin and the scenario.

At times, students struggle with identifying the mannequin and the concept of viewing it as a “real” patient. The students have to be informed and engaged in the scenario to fully realize the potential of how simulation will benefit them in understanding critical outcomes.

Cordeau (2012) performed this study over eight months and she discusses the importance of supporting students throughout the entire experience of the simulation scenario. The scenarios should be “challenging and geared toward the student level” (Cordeau, 2012, p. E101). A student’s success is enhanced by orientation to the simulator and having the objectives and scenario before the simulation exercise (Cordeau, 2012). Developing this theory into the scenarios can assist the nurse educator in creating effective outcomes; however, finding the correct instrument for evaluation has posed some challenges.

2.6 SUMMARY

The importance of a teaching-learning framework has been studied for development of positive student outcomes. The Joint Commission has outlined its eight critical factors for successful simulation and supports sustainability for effective programs. Simulation has not been outlined as a specific pedagogy in nursing education but is utilized throughout the nursing curriculums. The importance of evaluating students is a new concept in nursing schools; however, the future of licensure for nurses could hinge on these various methods of testing. Simulation has evolved and will continue to be used as an adjunct to learning. Schools of nursing use many part-time

faculty members, a fact that makes it difficult to have continuity in evaluating students. Students want to be challenged and expect simulation to be offered as part of their education; however, faculty members need the support and training to deliver effective simulation.

2.7 SIMULATION IN NURSING PROGRAMS

The issue of instructor ability and comfort level with simulation technology has been an overarching theme throughout the literature (Harder, Ross, & Paul, 2012). The complexity of high-fidelity simulation coupled with the mean age of nursing faculty being over 50 has added to the anxiety and apprehension about using technology associated with simulation (AACN, 2010).

Students have an overall satisfaction with learning and gain self-confidence in performing simulation scenarios (Swenty & Eggleston, 2011). The faculty perceptions of using simulation are not as reassuring. Harder et al. (2012) found in a qualitative study of instructors that many believed "they were not qualified, had used simulation only a few times . . . had a decreased comfort level with technology [or] felt uncertain as to what their role was in the simulation process" (p. 203).

Howard, Englert, Kameg, and Perozzi (2010) found nursing instructors preferred simulation if there was adequate support for the technology. The literature did not differentiate between faculty perceptions on implementing simulation and the process of evaluating students.

High-fidelity simulation has been embraced by a large portion of nursing schools from around the country. A recent online survey conducted by the NLN of baccalaureate (BSN) accredited schools found a majority of nursing schools using simulation. The survey was sent to

209 eligible schools of nursing to disclose information about the uses of simulation in their schools of nursing.

The authors received 78 responses. All the schools offered the BSN degree, and 60 schools reported using patient simulation in their programs. Fifty-five percent of the respondents reported using patient simulation competency testing and performance evaluation of their students as part of the course objectives (Katz, Peifer, & Armstrong, 2010). The survey did not include any information regarding the instruments used in testing, whether the instruments were valid, or how faculty were trained in using simulation.

2.8 CHALLENGES OF EVALUATING STUDENTS

Tanner (2011) expresses concerns with the state of measurement in nursing education research. In an editorial, she expounds on what she considers three broad categories in measuring learning outcomes. About student perceptions, attitudes, and opinions, she states, "these are easy to develop to assess program effectiveness," but cautions of "the many variations in how simulation is conducted" (p. 491). Tanner has discussed the wide range of testing in simulation and notes the lack of psychometric testing offered (Tanner, 2011).

In simulation, students' abilities, attitudes, and even their own personality traits can be attributed to the outcome of a simulation scenario. Faculty members do not always have the training or understanding to incorporate these types of psychological measurements into simulation. As stated by Gantt (2010), the evaluation of the student might respond to different types of tools. However, Gaba and Glavin (2008) "caution on setting standards with existing instruments and metrics . . . used in evaluating simulation" (p. 70).

The need for flexibility in scenarios and instruments used to measure could assist faculty in evaluation methods. As discussed by Tanner (2011), faculty members need to have multiple case scenarios to assess for reliability, and she supports the continued use of scales or assessment rubrics to test student's ability. Educating faculty on the rubrics and their expectations is also an important component to keep consistency throughout the evaluation process.

Jones and Hegge (2007) believe faculty should be comfortable in their role of utilizing high-end simulation. They also expound on the importance of this alternative learning experience for students (p. e15). The researchers' main purpose was to find a comfort level with instructors who were using simulation for teaching and evaluating skills. The researchers found that many instructors were not comfortable in promoting active learning from students. The highest mean value indicated that they were not comfortable in using simulation in evaluating students (Jones et al., 2007, p. e17). An interesting finding was assistant professors were more comfortable than members who held the position of instructor (p. e18). The instructor could either have a lack of training or not teach full time for the school. These results are not rare and can contribute to the lack of evaluation methods used in simulation.

This research has lent itself to assisting schools of nursing in formulating plans to instruct faculty on how to effectively implement simulation. As health care continues to change, nursing faculty will need to look toward alternative methods to teach nursing students. If hospitals want new graduate nurses to be adequately prepared to integrate into the role of the professional nurse, schools of nursing will need to rise to the challenge to effectively educate these students.

2.9 FACULTY DEVELOPMENT APPROACHES

Adamson (2010) uses online surveys to reveal how resources for HPS were used in associate-degree programs in a western state. A two phase descriptive method was used in the study. The first phase was a survey distributed to deans and directors about the costs associated with resources and training faculty in simulation. The second phase of the study was a separate survey to nursing faculty about their perceptions regarding simulation. The study used HPS versus high-fidelity simulation with the results of faculty perceptions as an important contributing factor.

Questions ranged from length of time as an educator to whether simulation training was offered to whether training assisted faculty in the courses they teach. The survey questions asked about resources or incentives to integrate HPS in their courses. Eleven schools agreed to participate, and four deans or directors responded to their respective surveys. Seventy-four faculty members were contacted, with 24 completing the survey and 17 of the respondents using simulation in their courses. All narrative data were retrieved by the investigator to obtain themes. Descriptive statistics were used to obtain the data from both surveys (Adamson, 2010, pp. e76- e77).

The data received from the nursing faculty outlined the lack of time to prepare curricula or to learn how to use simulation in their courses. Adamson (2010) also mentions, “a lack of modeling for faculty to evaluate how a simulation program could benefit their students” (p. e78). Faculty commented on the benefits of support from their respective colleges to send them to training courses or conferences. The recommendations from faculty were to provide support to handle technical aspects of simulation, give incentives to incorporate simulation, and have “super users” to train other faculty (Adamson, 2010).

The results provide insight into understanding faculty concerns and into ways of implementing programs to assist them in developing the necessary skills to evaluate students. Schools of nursing are just beginning to develop programs and conduct pilot studies on the effectiveness of these programs.

The Wisconsin Technology Enhanced Collaborative Nursing Education (WI-TECNE) project was designed to investigate faculty teaching approaches using technology (Jansen, Berry, Brenner, Johnson, & Larson, 2010, p. e223). The purpose was to engage faculty in mannequin-based simulation. The project received a grant and was fully funded for five years. The project was developed to enhance patient safety and the quality of patient care. This was done by supporting faculty from both associate- and baccalaureate-degree nursing programs to utilize technology-enhanced teaching approaches (Jansen et al., 2010).

The project consisted of 30 scholars from the University of Wisconsin system and from the neighboring Wisconsin Technical College system nursing programs. The 30 scholars were divided into teams of four or five and the program used a train-the-trainer approach for each to share his or her knowledge and expertise with other faculty members. To accomplish the primary goals of educating, there were a series of six-hour-long brown-bag video teleconferences, a one-and-half-day workshop held at the main campus, and online discussions. The program was designed from the theoretical framework of Jeffries' (2007) book *Simulation in nursing education: From conceptualizing to evaluation* (Jansen et al., 2010).

The article describes various workshops for the faculty. Workshops consisted of scholars clarifying the different delivery methods of simulation. Effectiveness was evaluated using feedback forms, reports on the simulation development, and pre-post surveys for faculty to complete online.

The workshop evaluations were positive, with many faculty members acknowledging constructive feedback from the scholars in their fields of simulation. There were faculty members who wanted more time to develop and share their projects with the other teams. In the pre survey, 25 of the faculty questioned the need for simulation in their curricula. However, the post survey was completed only by 11 faculty members, giving little insight into the area of faculty perception of simulation. Faculty did note obstacles in using simulation: lack of time, lack of space, and lack of simulation equipment (Jansen et al., 2010, pp. e227-e228). The obstacles can cause problems for a program trying to implement and fully utilize simulation. The key is to create a creative balance of implementing programs while continuing to pilot methods to eliminate these obstacles.

2.10 PILOT STUDY ON A SIMULATION TRAINING PROGRAM

Jansen et al., (2010) elaborates on "the need for creative efforts to keep faculty engaged while learning new pedagogies" (p. e228). The article concludes with the effectiveness of the project to assist faculty in the use of mannequin-based simulation. However, the article offers little insight into the perceptions of the faculty. The authors speculated that the low responses in the post survey resulted from faculty workload, time, and faculty course development (Jansen et al., 2010).

Nursing programs are using high-fidelity simulation in their nursing programs, "yet little research exists on faculty development programs that could assist the teacher to better use this instruction tool" (Jones, Fahrenwald, & Ficek, 2013, p. e213). The authors of the study use

Ajzen theory of planned behavior as their framework to have an understanding of how students are taught in an associate-degree nursing program.

The article was based on a pilot study of baccalaureate nursing faculty using a summer simulation training program on faculty attitudes, subjective norms, perceived behavior control, and intent to use simulation as a teaching strategy (Jones et al., 2013, p. e214).

The design was the Summer Simulation Training Fellowship (SSTF) program, which was pilot-tested using a pre-post survey test with single-group design (Jones et al., 2013, p .e214). The pre-post test had a faculty sample of 11 and laboratory assistants of three, with seven not participating. The survey used a Likert-type response scale from one meaning strongly disagree to five meaning strongly agree. The 11 who completed the survey (52 percent), the mean attitude score increased from 4.17 on the pre survey to 4.59 on the post survey (Jones et al., 2013, p. e214). The overall change was not statistically significant.

The overall study was to examine efficacy of the SSTF program on the baccalaureate nursing faculty. Paired t-test differences between the pre and post surveys indicated that the SSTF program intervention had a significant, positive impact on all four measures, with the strongest impact measure being perceived behavioral control. The intended teaching with simulation improved from pre survey to post survey. The pilot study did have two-thirds of faculty who previously had hands-on training with simulation and more than half had attended educational programs on simulation. The limitations were that further exploration was needed on validity and reliability of the survey and that those who participated might be more inclined to use simulation. The sample was relatively small and represents only one college of nursing (Jones et al., 2013).

2.11 SUMMARY

Students support and have come to expect simulation in their nursing programs. Nursing schools are offering simulation; however, details of evaluation methods used and how simulation is embedded into the nursing curriculum remain unclear. Challenges continue with training faculty members in the uses of simulation. Faculty members are apprehensive toward simulation because of the lack of support on the technology and time to implement simulation into the nursing curriculum. The process of evaluating students in simulation can be subjective, and researchers have cautioned about setting these standards for students. Within the past five years, studies have shown faculty development as a new concept in simulation. The development can assist with educating faculty members on how to debrief, evaluate, and implement simulation within their courses. Faculty members support the development courses; however, time constraints and shortage of nursing faculty members will continue to challenge the profession.

2.12 NURSING FACULTY SHORTAGE

Faculty development is the next frontier for effective implementation of simulation. Issues surrounding the impending faculty shortage in nursing will be a large obstacle facing schools of nursing. A study by the Robert Wood Johnson Foundation (RWJF) *Nursing Faculty Shortage: A Crisis for Health Care,* (Yordy, 2006) depicts the grim reality facing the future of the nursing profession. The AACN also reported in numerous white papers, within the past decade, on the shortage of faculty.

Nurses do not find teaching an acceptable career choice because many nurses are not interested in pursuing research-based doctoral degrees. The unattractive salaries that education has to offer and the pressure to obtain research grants to gain tenure are reasons that nurses do not choose this profession. Yordy (2006) points out that faculty workload between teaching and research does not help the cause.

A concern of many in higher education is the fact that the largest generation of baby boomers will retire, causing a large gap in the education system, and maximum need for new faculty to fill these positions. The Bureau of Labor and Statistics lists the average age of a nurse faculty to be 54 years. The shortage, coupled with the average age, will be a very large consequence as schools try to implement and embed simulation into the nursing curriculum.

Nursing students have been studied, piloted, and interviewed about their perceptions of simulation for the past ten to 15 years. Simulation as a teaching and learning concept has emerged and is an expectation of students applying to schools of nursing. In graduate school, nurses are evaluated using high-fidelity and HPS; however, evaluation methods are still new to undergraduate nursing students.

The fields of anesthesiology and medicine have recently started to adopt the process of an evaluation process using simulation. The American Board of Medical Specialties (ABMS) has developed a maintenance-of-certification (MOC) program. The certification was developed for physicians to maintain their specialty credentials (dependent on their areas of specialty). To maintain certification, a physician has to complete the MOC within six to ten years after his or her residency (Feldman, Lazzara, Vanderbilt, & Diaz Grandados, 2012, p. 281).

As the continuum of health care changes, all health care providers will need to be evaluated and possibly certified in their specific roles. The process continues to be in its infancy

and will need continued research and evaluation to prove effectiveness. Schools of nursing will need to begin simulation earlier in their programs and incorporate the evaluation process throughout their nursing curriculum. They will also need to train and retain faculty to implement these strategies as the profession begins to demand changes in the way a nursing education is delivered.

2.13 STUDENT SATISFACTION WITH SIMULATION

Surveys on student satisfaction with simulation have been well documented and students have positive experiences from the use of simulation (Howard, Englert et al., 2010). Students embrace technology and the transfer of knowledge into the clinical setting. The corollary is with evaluating student performance as it relates to realism of simulation, the inadequacy of reliable instruments, and faculty apprehension and knowledge in using simulation. In the quest to satisfy responses from the Institute of Medicine's (IOM's) report on the future of nursing, the question will be how to successfully integrate reliable high-stakes evaluation methods with high-fidelity simulation (Yordy, 2006).

Schools of nursing have the increased responsibility of graduating new nurses who are prepared to give safe, effective care, and hospitals expect new nurses to have the skills to handle emergent situations. The NCLEX-RN is the examination that licenses a graduate nurse to practice as a registered nurse. The exam does not test critical thinking or place students in situations to allow them the transfer of didactic to clinical knowledge. Patricia Benner and her colleagues call for faculty to "engage students in clinic-like experiences so they can learn to use

knowledge and practice thinking in a changing situation" (Schultz, Shinnick, & Judson, 2012, p. 457).

The International Nursing Association for Clinical Simulation and Learning has developed the *Standards of Best Practice for Simulation (2013)*. The proficient facilitator should have the skills to manage the complexity of all aspects of simulation. The facilitator is instrumental to the participants learning (Boese et al. 2013).

In a study conducted at a large academic research university in the mid-Atlantic, nursing students conducted an online survey on simulation offered in a senior semester of a nursing course (Kelly & Zewe, 2013). The survey received IRB approval from the university and the online survey was created using an approved survey instrument (Qualtrics, 2012). The survey was conducted after the simulation portion of the course at the research institution. The survey consisted of 13 multiple-choice questions and one open-ended question. Two of the multiple-choice questions allowed students to write in responses.

A total of 69 students were sent the questionnaire via email with one reminder email sent five days after the initial survey. Thirty-eight students completed the survey. The students ranged from traditional four-year, accelerated second degree students, and RN Options student (students who are a licensed RN, currently working as an RN and received a nursing education from a two-year or diploma school and who are completing the BSN). The following four objectives were designed to guide questions in developing the simulation survey:

1. What are students' perceptions of the simulation experience?
2. Do students believe they gained knowledge from the experience?
3. Do students believe they need cueing during the evaluation experience (and if they do, why)?

4. Do students have an overall appreciate of the simulation experience in their nursing education?

Thirty-five percent (*n* = 13) rated the overall simulation experience excellent and 54 percent (*n* = 20) rated it good. Seventy-nine percent (*n* = 30) agreed they gained knowledge, and 78 percent (*n* = 28) agreed the debriefing process prepared them for their individual scenarios. Responding to an emergency for the individual scenario also rated high at 92 percent (*n* = 34).

However, when the question was asked whether the instructor being in the room during the individual scenario made the experience more intimidating, the response was 17 percent (*n* = 6) for agree and 25 percent (*n* = 9) for somewhat agree.

One of the questions was regarding whether the instructor had to cue the student during the individual simulation scenario. Results showed that 57 percent believed they needed to be cued as opposed to 43 percent who did not believe that they needed to be cued. The following table outlines reasons that students gave in the survey for believing that they needed to be cued.

Table 1. Student Responses

Number	Question	Response (n)	Responses (%)
1	I froze at the start and needed assistance to begin the scenario	3	14
2	I was unable to anticipate the physician orders.	2	10
3	I forgot the treatment protocol for the situation.	5	24
4	I was unable to detect the treatment protocol for the patient.	2	10
5	Other (please specify)	9	43
	Total	21	100*

**totals are not precise because of rounding.*

As shown in Table 1, students gave a variety of reasons in the category of "other." A few examples from student perceptions of the reasons they needed to be cued during the simulation

ranged from the student not knowing he or she "had to apply the blood pressure cuff," "did not know the scenario was over," "did not follow-up on doctor's orders," or "had trouble talking to the patient."

This survey prompted the investigator to explore faculty knowledge in implementing simulation. The issue of how faculty performed individual scenarios led the researcher to review the literature on faculty development in simulation. The review revealed faculty development as a new hurdle to overcome in developing effective simulation programs.

2.14 VALID AND RELIABLE INSTRUMENTS IN SIMULATION

In developing a program to assist faculty in evaluation, a reliable and valid instrument needs to be used. The literature provided many instruments that have been developed and studied for their reliability and validity.

Kardong-Edgren, Adamson, and Fitzgerald (2010) report the use of evaluation methods used in simulation and write about the vacuity of reliable and valid instruments. The article provides information on 22 instruments used to evaluate simulation. The authors believe that the instruments will need to be used "multiple times in multiple regions by various nursing programs, which will help determine reliability and validity in multiple settings" (Kardong-Edgren, et al. 2010, p. e33).

In 2012, Adamson, Kardong-Edgren, and Willhaus updated their original findings on the reliability and validity of evaluation instruments. Their findings concluded that little had changed and they see a need to find meaningful ways to evaluate students in simulation (p. e1). They also

mention four of the original instruments, which were found to be used more frequently in simulation:

> The Sweeney-Clark Simulation Performance Evaluation tool (CSET); the Lasater Clinical Judgment Rubric (LCJR©); and the Creighton Simulation Evaluation Instrument (C-SEI™), subsequently modified to create the Creighton Competency Evaluation Instrument (C-SEI™) used in the National Council of State Board of Nursing (NCSBN) National Simulation Study (p. e2).

The authors focused on reliable and valid instruments and found that only the Sweeney-Clark simulation performance evaluation tool had been modified to reflect interrater reliability (Adamson, 2012). Adamson, Gubrud, Sideras, and Lasater (2011) reported extensive reliability and validity testing for a range of studies used to assess the psychometric properties of the LCJR.

To effectively evaluate students, nursing faculty must find and use valid instruments. Adamson (2012) states, "it is important to consider whether the instrument is appropriate for the population and the activity to which it is being applied" (p. e6). The issue with consistency in assessment has placed a huge burden on nursing faculty. The key is to expand on evaluation instruments already developed. Gantt (2010) suggests moving forward and instead of creating a new evaluation instrument, testing the ones that are available for reliability and validity.

Instruments to evaluate student performance are difficult to create. Todd, Manz, Hawkins, Parson, and Hercinger (2008) investigated the many currently being used to evaluate students in simulation. The study was attempting to develop a quantitative instrument to assess student performance during simulation. The researcher identified two; however, neither had both the validity and reliability as a simulation instrument. The goal was to develop an instrument to evaluate multiple students in a simulated clinical experience (SCE).

To create the foundation of evaluation, the core competencies of the *Essential of Baccalaureate Education for Professional Nursing Practice* were used. The students were graded as a group with a passing score of 75 percent, allowing faculty to evaluate group dynamics and decision-making, which affected the group. To test for reliability, six faculty members were trained, and the researchers provided two educational sessions for the evaluators.

The evaluators were instructed not to "guide, teach, facilitate, or interact with the students during the simulation experience" (Todd et al., 2008, p. 10). Faculty not involved in the study facilitated the simulation. All evaluators practiced using the instrument while they watched a prerecorded simulation. This assisted in the consistency of scoring for participants.

The simulation instrument was piloted using senior-level students in their final semester of the nursing program. There were 16 groups totaling 72 students. Two faculty members who had gone through participation training evaluated each simulation. The evaluators had higher percentages from the critical-thinking and communication portions of the simulation scenarios. The evaluators indicated that, "evaluating simulation as a pass/fail experience assisted students to approach the SCE with a greater commitment" (Todd et al., 2008, p. 10).

Gantt (2010) conducted a survey using the Clark Simulation Evaluation Rubric from two different schools of nursing. The study used 69 students from an associate's degree program and 109 from a baccalaureate degree program. The rubric evaluated areas of assessment, history gathering, critical thinking, communication, patient teaching, and recognition of necessary diagnostic studies (Gantt, 2010, p. 103). It pairs Benner's five levels of nursing experience with Bloom's six cognitive domain categories (Gantt, 2010, p. 103). The author does state a limitation: in which interrater reliability needs to be better established with this rubric.

The students from the associate program were not given a passing score using the Clark rubric; the instructors preferred that students complete the scenario without the added pressure of a passing grade. The baccalaureate degree program followed the same course, allowing students to complete the scenario or repeat instead of assigning a passing grade. The students were in groups for the simulation, questioning how effective grading can be established using a rubric.

The study found that different teaching styles of different instructors could "undermine reliability, as in the case when the evaluative scenario turns into the teaching scenario where students' actions are interrupted" (Gantt, 2010, p. 104). The author also states, "Whether a point system or a percentage is assigned, it is one of the factors which challenge educators in designing effective evaluation methods" (Gantt, 2010, p.104).

The LCJR uses Tanner's model of clinical judgment. In the model, clinical judgment is rated as noticing, interpreting, responding, and reflecting. Adamson (2012) states, "untrained raters tended to use a more linear approach to scoring student work when using rubrics and are more likely to base their scores on personal experience and their individual understanding of constructs guiding rubrics" (p. 68).

Instructors will place their personal experiences into the scenario and attempt to incorporate those beliefs when evaluating students in a simulation scenario. If an instructor has not been properly trained to evaluate simulation, it is difficult for him or her to separate their personal experiences from an honest assessment of the student. The key is to train the instructors using a valid instrument allowing for reliable results.

Adamson (2012) describes three independent studies that assessed the reliability and validity using the LCJR (p. 69). The Adamson study examined reliability when individual case variation is minimized but raters had the opportunity to see a substantial range of cases. The

study used video-archived vignettes that portrayed students in scenarios. The scenarios were designed for different levels of student learning. The goal was to design the vignettes to "depict student's proficiency level either low, at, or above expectations at the senior level" (Adamson, 2012, p. 69). Twenty-nine educators around the country viewed and scored the vignettes using the LCJR.

Adamson (2012) provided "valid evidence based on relationships with measures of other variables: the intended level of the scenarios" (p. 70). The Guburd-Howe study was developed to better understand the clinical judgment in nursing students. The study used the *How People Learn* (Bransford, Brown, & Cocking, 2000) framework to design instructional strategies in high-fidelity simulation environments (Adamson, 2012). The text uses a connection between classroom activities and learning behaviors. The study had two phases to ensure that the LCJR was established for interrater reliability.

The first phase was for initial rater training prior to data collection for the larger study. The second part was to use data collected during the course of the larger study. The assessment of interrater reliability was to assess the scores using the LCJR prior to the initiation of the data collection. The researchers identified five previously recorded simulations to serve as the anchor. The study chose two raters who were nursing faculty trained in a workshop on the research-based model of clinical judgment (Adamson, 2012).

The conclusion was a mean score of 92 percent in agreement between raters when they examined the 11 criteria of the LCJR. Interrater reliability was improved after the larger study by 96 percent. The p-values were greater than 0.05 indicating acceptable interrater reliability using the LCJR for the study (Adamson, 2012, p. 71).

The Sideras study hypothesized that senior nursing students would demonstrate a significant higher level of clinical judgment than the end-of-the-year junior nursing students would. The study used the LCJR and compared the two groups using three simulation case scenarios. In this study, faculty was able to accurately differentiate performance between the two groups of students (Adamson, 2012, pp. 71-72).

Adamson (2012) concluded that each of the three studies did provide evidence of validity of raters to evaluate using the LCJR (p. 72). However, evidence supporting rater selection as a key variable, which affects the reliability results. Adamson (2012) concludes, "Raters need to view and score a wide range of simulation performances to adequately assess the reliability of an evaluation assessment instrument" (pp. 72-73). She also states that educators need to think carefully about developing simulations that "reveal the true range of a students' clinical judgment ability" (pp. 72-73).

A favorable instrument used to evaluate students is the Creighton-Simulation Evaluation Instrument (C-SEI™). The AACN *Essentials for Baccalaureate Nursing Education*, served as the foundation to develop the C-SEI™. The C-SEI™ has undergone extensive reliability and validity assessment and has been adapted for use in the National Council of State Boards of Nursing Simulation Study (Adamson, 2012, p. e3). Nursing faculty at Creighton University College of Nursing developed this all-encompassing evaluation instrument.

Manz, Hercinger, Todd, Hawkins, and Parsons (2012) found when it came to evaluating procedures, nurse educators were scoring students differently on tasks and developed a tool because of the high rate of inconsistency. They believed that a holistic approach to assessment such as maintaining dignity and respect, and building a rapport with the patient is just as important as completing tasks (i.e., hand washing). The challenge is to move away from the

checklist approach, which cannot provide a clear distinction between student performance in completing a task and critical-thinking.

A way to assist nursing instructors was to create a sample web-based video with links to discussion worksheets for the instructors. Nurse educators could view the videos as they relate to the four components of the C-SEI™. The four components are assessment, communication, critical thinking, and technical skills. The videos had a simulation along with nurse instructors conversing and negotiating essential elements of student performance. This approach allowed dialogue among the educators and resulted in clear and consistent expectations of all the nurse instructors in evaluating students (Manz et al., 2012).

2.15 SUMMARY

The nursing-faculty shortage will continue to play an integral role in how students are educated. To help new faculty members schools of nursing will need to have effective instruments to evaluate students. With new evidence to support the need to evaluate students, researchers have been developing valid and reliable instruments for simulation. The search for valid and reliable instruments will be imperative as schools of nursing begin to develop programs to educate faculty members on effectively evaluating students using simulation.

Schools of nursing will need to incorporate innovative teaching methods to engage faculty members. Technology will continue to enhance the learning experience and schools of nursing are beginning to integrate these various methods into their curricula. However, without a consistent training program for faculty, the interest will fade. Research is imperative; however,

implementation and sustainability of these training programs are essential for continued successful outcomes of students in nursing programs.

2.16 LITERATURE SUMMARY

As simulation becomes a pedagogical model within nursing curriculum, schools of nursing will have new challenges to successfully sustain it within the programs. The purpose of the research is to gain a thorough understanding of faculty members' knowledge and interest in simulation. It is also important to realize positive student outcomes from simulation to incorporate effective teaching methods to promote this adjunct to learning.

Students will continue to expect nursing schools to offer high-quality simulation. Faculty members will continue to be burdened with heavy workloads; however, their training will be pivotal in how simulation is delivered to students. The National Council Licensure (NCLEX) will continue to strive for more-concrete methods of testing and could require a simulation component to its testing methods. Hospitals and other health care institutions, in efforts to maintain patient safety standards, will demand that new graduates be prepared to handle emergent situations.

High-fidelity simulation has been in the health care field for over 25 years. Anesthesiology and nurse-anesthetist programs have been the catalyst in effectively utilizing simulation. In high-acuity specialty areas, medicine is utilizing programs to certify physicians. Simulation as a pedagogy is considered part of many health care programs. Nursing, while utilizing simulation continues to struggle with the technological advancement and the time it takes to incorporate into the nursing programs.

The CCNE standards will continue set the bar high, and the profession of nursing will need to incorporate simulation but have the means to sustain it throughout the nursing curriculum.

The survey study outlined faculty and student perceptions of simulation as it pertains to student outcomes and faculty best practice. The university will support faculty development as part of the universities mission to provide a quality nursing education to all of its students.

3.0 METHODS

3.1 IMPORTANCE OF STUDY

The purpose of this study was to conduct a comprehensive survey of perceptions from nursing faculty members and nursing students in an undergraduate senior nursing course. The two main issues are a) faculty perceptions of faculty best practice and expected student outcomes, and b) student perceptions of faculty best practice and expected student outcomes. The data obtained allows the researcher to find areas of improvement in these main areas to incorporate a faculty development program.

The nursing workforce is slated to grow at a slower rate, and many employers have shortened orientation time for new graduate nurses. The new generation of nursing students expects high-fidelity simulation in their nursing programs. There is a correlation with using simulation as pedagogy, how students are able to critically think, and their overall satisfaction with nursing programs (Montenery et al. 2013). The literature states the average age of nursing faculty members is over 50, causing a potential generation gap with students expecting various methods of instruction.

The aim is to obtain data to support the need to implement a program, which allows faculty members to be comfortable with utilizing simulation in an undergraduate nursing

program. As outlined in Jeffries (2007) framework, the successful training of faculty members will result in better student outcomes.

3.2 PILOT STUDY

The pilot study allows the researcher to pretest the survey instruments. Pilot-testing a survey questionnaire allowed the researcher to make changes in the design of the questionnaire (Mertens, 2010 p. 191). As the researcher creates his or her own survey design, it is important to outline various topics to be included in the survey (Mertens, 2010, p. 187).

A pilot study was conducted by the author on faculty and student perceptions in an undergraduate senior nursing course. The course is offered three times during an academic year at a large research university located in the mid-Atlantic region. Students who were in the course for the spring term and nursing faculty who taught the clinical component of the course were recruited for the study.

The course has traditional students (average age 18 to 24) and second-degree accelerated (students who already have earned a four-year degree in another discipline and enter the one-year program to complete a BSN), and RN Options students (students who are a licensed RN, currently working as an RN and received a nursing education from a two-year associates degree or hospital diploma school and who are completing the BSN). The course is 15 weeks in length and consists of 90 hours of clinical for traditional students and 60 hours for the accelerated second-degree students with 45 hours of didactic instruction for both groups.

The sample size of students surveyed was $n = 78$ and the faculty sample was $n = 6$. The sample sizes were small, so the surveys were developed to utilize paper-and-pencil responses. This was chosen over an electronic survey for better response rates (Babbie, 2012).

The students learn critical scenarios in an eight-hour day in the simulation center and then are tested on the material the following week. The students do a pre-post survey design, a written test, and then a one-on-one simulation exercise with a nursing instructor. The survey was completed after all students had finished the testing portion of the simulations.

The survey yielded some data on which the researcher could expound on in a later study. The faculty results showed that the average age and years of experience correlate with the literature regarding characteristics of current nursing faculty. Faculty members would prefer to learn more about debriefing and evaluating students in simulation. The literature supports this, with curricula design noted as an important element to integrate simulation into the courses. These data will be beneficial in designing a development course and focusing on the key elements as found in the survey.

Faculty members were divided in their responses on whether students should be graded as a group or individually. Four faculty members agreed that students should be graded as individuals. However, two were in agreement and two somewhat agreed that students should be graded as a group. The literature does not support one evaluation method over another, and more research needs to be conducted in this area.

Descriptive statistics and a frequency distribution were used in this data analysis. A valid percentage, which shows that the ratios gathered are factual and are not missing any data, was used to determine statistical significance. The ability to compare data results from the faculty

members and students proved challenging. The study consisted of a small sample size with no benefit to be gained by performing a statistical analysis such as a t-test.

Because one sample was larger than the other, it was concluded that a Mann-Whitney U test could be done between the two groups. The test was done in part A and part B of the survey. Part A questions focused on student and faculty perceptions of the student outcomes. Part B survey questions were a mix of student outcomes and faculty best-practice initiatives.

The questions were based on student outcomes as outlined by the Creighton Simulation Evaluation Instrument (C-SEI™). The Mann-Whitney U test showed no statistical difference (p=0.613) between the student and faculty with questions developed from part A of the survey. The following are the survey questions that were posed to the faculty:

- The knowledge gained from the students' experiences through the simulations can be transferred to the clinical setting.
- The full eight-hour day performing simulation scenarios at promotes better learning outcomes for students than an entire 8 hours of clinical
- Students were prepared to provide specific rationales for their actions during the simulation scenario.
- Students demonstrated their ability to communicate with other providers of the health care team.
- The students demonstrated their ability to obtain pertinent subjective and objective data and report findings to the instructor.
- The students demonstrated their critical-thinking skills learned through the nursing program during the simulation.

The following are the survey questions that were posed to the students:

- The faculty clearly communicated the objectives and expected outcomes to the participants of the simulation scenarios.
- The faculty supported a safe learning environment that advocated active learning.
- The knowledge gained through the simulation experiences can be transferred to the clinical setting.
- The full day of simulation scenarios prepared me to recognize an emergency situation on the clinical unit.
- The faculty provided constructive feedback and discussion after the simulation scenarios

However, part B of the survey did show a statistical difference between student and faculty responses (p =0 .015). The questions were based on student outcomes as outlined by the Creighton Simulation Evaluation Instrument (C-SEI™) and the Standards of Best Practice in simulation as outlined by the INACSL. The following are the survey questions that were posed to the faculty:

- Students were prepared to provide specific rationales for their actions during the simulation scenario.
- Students demonstrated their ability to communicate with other providers of the health care team.
- The students demonstrated their ability to obtain pertinent subjective and objective data and report findings to the instructor.
- The instructor modeled professional integrity during the individual scenario.
- The students demonstrated their critical-thinking skills learned through the nursing

program during the simulation.

- The faculty member was able to assess the students' acquisition of knowledge and skills during the individual scenario.
- The students approached the simulation experience as a serious evaluation of their abilities.

The following are the questions that were posed to the students:

- I was able to provide specific rationales for my actions during the simulation scenario.
- The individual simulation scenario allowed me to demonstrate my ability to communicate with other providers of the health care team.
- The individual scenario allowed me to obtain pertinent subjective and objective data and report my findings to the instructor.
- The instructor modeled professional integrity during the individual scenario
- The individual simulation scenario allowed me to use the critical-thinking skills I have acquired throughout nursing school.
- My instructor assessed my knowledge and skills during the individual scenario.
- The instructor assessed my attitudes and behaviors during the individual scenario.

In conclusion, the results of the Mann-Whitney U test showed some statistical difference in student and faculty member responses as they relate to student outcomes and faculty best practices. The pilot study assisted the researcher to establish a baseline for further statistical analysis in this area.

Babbie (2012) discusses the importance to pretest a survey, allowing the researcher to find flaws in the instrument. The instrument proved to be reliable in the results that were

obtained. However, the pilot study identified areas on which to focus further research. The data needs closer analysis to identify specific questions on which to focus in the survey.

The sample size was small, and the study was conducted only at one point in time. Final conclusions cannot be based on one sample. The students and faculty change each semester, and that variation can change final statistical results. The study will be repeated to obtain data to determine if the statistical findings will be consistent.

3.3 STATEMENT OF THE PROBLEM

The literature has shown that faculty members have decreased comfort levels with implementing simulation. Nursing-faculty members have heavy workloads that do not allow the time to develop effective simulation scenarios. Students embrace the technology and the applied approach simulation that has to offer. The literature has shown that effective programs can change faculty perceptions of using simulation in their curricula. The aim is to develop a successful program to assist faculty members in utilizing simulation to its full potential.

3.4 RESEARCH QUESTIONS

1. How do faculty members perceive the value of using high-fidelity simulation in student learning?
2. How do faculty members rate their use of best practices during a simulation scenario?
3. How do nursing-faculty members view student outcomes during the simulation scenario?
4. What do faculty members view as the most and least interesting aspect of faculty development in teaching using simulation?
5. How do students perceive the value of using high-fidelity simulation in their learning?
6. Do nursing students perceive the faculty is adhering to the best-practice model when evaluating simulation scenarios?
7. Do nursing students perceive that they are able to transfer knowledge from the simulation scenarios to the clinical setting?
8. How do faculty members and students agree or disagree of faculty best practice and student outcomes using simulation?

3.5 RESEARCH DESIGN

The research was a descriptive study based on data analysis to examine perceptions of nursing faculty and students in evaluation methods using high-fidelity simulation. The pilot study allowed the researcher to examine the most efficient and effective method to obtain the data.

The researcher used two surveys one for students and one for faculty. Characteristic information obtained from faculty will allow the researcher to create a faculty development program. As stated in the literature, the age and education level of nursing faculty can have an impact on how simulation is delivered. Questions posed to faculty on their interest in or knowledge of development courses in simulation will also assist with future continuing education for faculty.

The questions that are posed to both faculty and students on faculty best practice and student outcomes were analyzed for their statistical outcomes. The goal is to have faculty members who are comfortable and confident in their ability to deliver simulation. Faculty members who can accomplish comfort and confidence are necessary to generate successful student outcomes. This will allow students to be confident and willing to use their experiences from simulation as they begin their nursing careers.

3.6 MEASURES

The two surveys were designed to provide information about faculty best practice and student outcomes. Surveys are useful in that they are able to generate information on an individual's

knowledge, attitudes, or behaviors (Mertens, 2010, p. 173). The validity of the information is contingent on what the participant reports (Mertens, 2010, p. 173).

Mertens (2010) states the importance of having set goals for the survey design. The goals of the surveys conducted by the researcher are to understand perceptions from both faculty members and students on evaluation methods used in simulation. The results will yield data on the need for a faculty development course on simulation. They were simple descriptive surveys because this will describe characteristics of only a sample from one point in time (Mertens, 2010, p. 177).

3.7 SURVEY DESIGN

The researcher was interested in addressing best practices of faculty members and student outcomes from simulation scenarios. The researcher used the recent publication on best practices for nursing faculty in simulation. The publication was from INACSL, *Standards of Best Practice: Simulation Standard V: Facilitator*, which outlines facilitator guidelines for managing simulation (Boese et al, 2013, p. S23).

Survey questions were also developed from the C-SEI™ on student expected outcomes (Todd, Hawkins, Hercinger, Manz, & Tracy, 2014). The two surveys were then reviewed and approved by the primary faculty–member who uses simulation in an undergraduate course at the university. The full surveys for faculty and students are located in Appendixes A and B.

3.7.1 Survey Design: Standards of Best Practice

The standards of best practice have been developed to assist faculty members who implement simulation. The International Nursing Association for Clinical Simulation and Learning (INACL) will hold its annual conference in 2014. One of the topics is *Adopting INACSL Simulation Standards as the Secret Formula for Success*. The nine criteria were developed to give faculty members a guide to facilitating successful simulations and use it as a pedagogical approach to teach nursing students. The framework for these criteria is important for successful outcomes of students.

The researcher designed the faculty and student surveys around Criteria 1, 2, 3, 5, 6, and 9. The six criteria chosen are areas important to facilitating effective outcomes for students. The research questions were framed around the six criteria to give insight into how simulation is currently delivered in an undergraduate senior nursing course at a large academic university.

Criterion 1 is based on the faculty member's ability to clearly communicate the objectives and expected outcomes to the participants. The items that guide this criterion are the ability to use effective communication skills, orient the participants to the environment, and guide the participants to consistently meet simulation objectives (Boese et al., 2013).

Criterion 2 is based on the ability to create a safe learning environment that supports and encourages active learning, repetitive practice, and reflection. The goal of this criterion is to have participants feel psychologically safe without fear of negative consequences (Boese et al., 2013). Simulation scenarios are for learning purposes and are designed with the learner in mind. The students should have a sense of security of knowing that all scenario performances are confidential and that students will not be reprimanded for mistakes.

Criterion 3 is based on the ability to promote and maintain fidelity. The simulation is developed with a level of fidelity that is needed to obtain the desired outcomes. The facilitator needs to demonstrate current knowledge that simulation is pedagogy. The facilitator also needs to understand the design of the simulation along with the technology and the scenario content (Boese et al., 2013). The fidelity is intended to guide the student in the scenario, and the facilitator needs to have this current knowledge to effectively deliver the simulation.

Criterion 5 is the facilitator's ability to assess and evaluate the acquisition of knowledge, skills, attitudes, and behaviors of the participants. The facilitator should use tools that have been tested for reliability and validity on a like population or situation. The facilitator should use knowledge of best practice to identify knowledge and performance gaps (Boese et al., 2013).

Criterion 6 is based on the facilitator's ability to model professional integrity. The facilitator should be positive, enthusiastic, motivational, well organized and prepared, and clinically proficient; share expertise; and be sensitive to ethical issues (Boese et al., 2013). The expertise of the faculty is imperative, as is showing support for the simulation as pedagogy.

Criterion 9 is based on the ability of the faculty member to provide constructive feedback and to facilitate debriefing with the students (Boese et al., 2013). This is an important component of simulation, and debriefing is a time to reflect and learn from the scenario.

Table 2 below shows the survey questions for nursing faculty that were created and framed from the following research questions:

- How do faculty members perceive the value of using high-fidelity simulation in a student learning?
- How do faculty members rate their uses of best practices during a simulation scenario?

Table 2. Faculty Survey Questions Aligned with Best Practice

Faculty Survey Question	INACSL Best Practice
Faculty clearly communicates the objectives and expected outcomes to the participants of the simulation scenarios.	Criterion 1
Faculty supports a safe learning environment that advocates active learning.	Criterion 2
The student approached the simulation experience as a serious evaluation of their abilities.	Criterion 3
The faculty member was able to assess the students' acquisition of knowledge and skills during the individual scenario.	Criterion 5
The instructor modeled professional integrity during the individual scenario.	Criterion 6
Faculty provides constructive feedback and discussion after the simulation scenarios.	Criterion 9

The student survey was developed using the same criteria as the faculty survey. Table 3 below outlines the student survey questions that were created and framed from the following research question: Do nursing students perceive that the faculty is adhering to the best-practice model when evaluating simulation scenarios?

Table 3. Student Survey Questions Aligned with Best Practice

Student Survey Questions	INACSL Best Practice
The faculty clearly communicated the objectives and expected outcomes to the participants of the simulation scenarios.	Criterion 1
The faculty supported a safe learning environment that advocated active learning.	Criterion 2
The knowledge gained through the simulation experiences can be transferred to the clinical setting.	Criterion 3
The full day of simulation scenarios prepared me to recognize an emergency situation on the clinical unit.	Criterion 3
My instructor assessed my knowledge and skills during the individual scenario	Criterion 5
The instructor assessed my attitudes and behaviors during the individual scenario.	Criterion 5
The instructor was well organized and prepared during the individual scenario.	Criterion 6
The instructor modeled professional integrity during the individual scenario.	Criterion 6
The faculty provided constructive feedback and discussion after the simulation scenarios.	Criterion 9
The nursing instructor in the room during the WISER individual scenario made the experience *less* intimidating.	Criterion 9
The nursing instructor in the room during the WISER individual scenario made the experience more intimidating.	Criterion 9

3.7.2 Survey Design: Student Outcomes

The faculty and student surveys had questions framed from the C-SEI™. The C-SEI™ has undergone extensive reliability and validity assessment and has been adapted for use in the National Council of State Boards of Nursing Simulation Study (Adamson, 2012, p. e3). Nursing faculty at Creighton University College of Nursing developed this all-encompassing evaluation instrument.

The questions were framed with outcomes outlined in the instrument. The areas of concentration include initiatives of assessment, critical thinking, communication, and technical skills.

The area of assessment focuses on the student's ability to obtain subjective and objective data from the simulation scenario. The student should conduct the assessment in an orderly fashion and follow up on outcomes. The outcomes are important to assess student learning from the simulation scenarios.

The critical-thinking area of the instrument is for students to interpret important findings, recognize irrelevant data, and perform specific interventions. The student should provide specific rationales for his or her interventions and have the ability to evaluate potential outcomes from the scenario.

The area of communication allows the faculty member to assess the student's ability to communicate with others during the scenario. The focus in this area is to assess the student's ability to know when he or she needs more resources during a potential emergent situation.

The last area of concentration on the instrument is technical skills. The student should demonstrate ability to manage equipment, provide safe care, and use patient identifiers.

Table 4 below shows the faculty survey questions that were framed using the C-SEI™ on student outcomes. The following research question was formulated with these areas of concentration as shown in Table 4: How do nursing-faculty members view student outcomes during the simulation scenario?

Table 4. Faculty Survey as Developed from Student Outcomes

Faculty Survey Questions	Student Outcomes (C-SEI)™
The knowledge gained from the students experiences through the simulations can be transferred to the clinical setting.	Assessment Communication Critical thinking Technical skills
The full eight-hour day performing simulation scenarios promotes better learning outcomes for students than an entire eight hours of clinical	Assessment Communication Critical thinking Technical skills
Students were prepared to provide specific rationales for their actions during the simulation scenario.	Critical Thinking
Students demonstrated their ability to communicate with other providers of the health care team.	Communication
The student demonstrated their ability to obtain pertinent subjective and objective data and report findings to the instructor.	Assessment
The students demonstrated their critical-thinking skills learned through the nursing program during the simulation.	Critical Thinking

Table 5 below shows the student survey questions that were framed using the C-SEI™ for student outcomes. This research question was framed in response to this survey question: Do nursing students perceive that they are gaining knowledge from the simulation scenarios?

Table 5. Student Survey as Developed from Student Outcomes

Student Survey Questions	Student Outcomes (C-SEI™)
I was able to provide specific rationales for my actions during the simulation scenario.	Critical Thinking
If you answer YES to cue: a) I froze at the start and needed assistance to start. b) I was unable to anticipate the physician order. c) I forgot the treatment protocol for the situation. d) I was unable to detect the assessment changes in the patient e) Other _____*varied results	Assessment Critical thinking
I felt confident in my ability to perform the individual scenario.	Assessment Critical thinking
The individual simulation scenario allowed me to use the critical- thinking skills I have acquired throughout nursing school.	Critical thinking
The individual scenario allowed me to obtain pertinent subjective and objective data and report my findings to the instructor.	Assessment
The individual simulation scenario allowed me to demonstrate my ability to communicate with other providers of the health care team.	Communication

The survey has five questions framed from the literature on professional development courses offered to faculty. The survey questions will yield information on what areas of interest are important to faculty-members. There is one open-ended questions for suggests from the faculty on what they support from a course on simulation. The following research question will be answered:

How do faculty rate professional development opportunities for instructors teaching with simulation scenarios?

The faculty survey also had questions on faculty characteristics created specifically from the literature review. The questions were on age, years teaching, and education level have all been outlined in the literature on how teaching methods are delivered using simulation. Years

teaching and education level have shown differences in how simulation is perceived by nursing instructors.

The faculty survey was developed with two questions related to whether faculty members believe students should be graded as a group or on an individual basis. The literature has shown both methods of delivery used to evaluate students. The literature has not supported one method over another in evaluating student outcomes. The following are questions posed to the faculty on professional development courses.

- Nursing instructors should have a course developed to assist them in evaluating student outcomes in simulation
- If a faculty development course was offered on simulation what area would be of most interest to you
    - Debriefing students
    - Evaluating students
    - Developing simulation scenarios
    - Learning how to use technology
- If a faculty development course were offered on simulation, what are would be of least interest to you.
    - Debriefing students
    - Evaluating students
    - Developing simulation scenarios
    - Learning how to use technology
- Have you ever had a continuing education course on simulation? YES/NO

  Did it include the following:
    - Debriefing students after scenario
    - Evaluation students (grading)
    - Developing simulation scenarios
    - Learning how to properly use the technology.
- What other supports do you suggest for instructors teaching with simulation?

3.7.3 Survey Instrument Design

The Likert scale was chosen for its familiarity and consistency with respondents (Babbie, 2012). The scale for the survey had four choices and an even number of possible responses. Responses of disagree, somewhat disagree, somewhat agree, and agree were. It is important to judge the relative strength of the agreement, and selecting answers such as "sort of agree" or "pretty much agree" would not be sufficient in strength (Babbie, 2012 p. 177).

Babbie (2012) posits that the term *anonymous* should never be used to mean confidentiality (p. 66). In this study, maintaining confidentiality was of upmost importance. The student participants were read a script by the principle investigator (PI) explaining the survey (see Appendix D). They were reminded that results would be kept confidential and would in no way reflect any grades associated with the course. The PI functioned in this role and had no participation in the class during this semester.

The nursing faculty members were read a script from the PI explaining the importance of the study and how the results would in no way reflect their performance as instructors at the university (see Appendix C). The faculty members were given the survey after all testing had been completed and students had left the simulation center.

3.7.4 Setting

The survey study was conducted on faculty and student perceptions in an undergraduate senior nursing course. The course is offered three times during an academic year at a large research university located in the mid-Atlantic region. Students who were in the course for the summer term and nursing faculty who taught the clinical component of the course were recruited for the

study. The setting was in the simulation center used by the university. Students completed the survey in a conference room after completion of the individual simulation scenario. Faculty completed the survey in the conference room after all students had left the simulation center.

3.7.5 Participants

This study recruited students from an undergraduate nursing course offered in their senior semester at a large academic research university located in a mid-Atlantic state. The course is offered three times in the academic year. Nursing faculty members who teach the clinical component of the course were recruited for the study.

The course had three categories of students: (a) traditional students (ages 18 to 24), (b) second-degree accelerated (students who already have achieved four-year degrees in other disciplines and entered the one-year program to complete BSNs), and (c) RN-Options students (licensed RNs currently working as RNs who received nursing education from two-year associate's degree or hospital diploma schools and who are completing the BSN).

There were 28 students (n = 28) eligible to participate in the survey. The number of eligible faculty was five (n = 5).

The sample sizes of students for the survey was n = 28 and the faculty was n = 5. Because the sample for both groups was small, the paper-and-pencil survey had a higher response rate than using electronic surveys (Babbie, 2012).

3.7.6 Data Collection

Approval was obtained from the University of Pittsburgh Internal Revenue Board (IRB) to conduct the study. The identification number is PRO14030714. The surveys were collected, and data was entered and verified by the PI. No identifiers were placed on the surveys and numerical coding was used to differentiate each survey.

3.7.7 Data Management

The form design, data entry, and data verification was performed using Teleform (a Windows-based software package for automated data-entry verification). The data (surveys) were verified, scanned, and exported on to a secure Oracle database (version 11g, Oracle Corp., Redwood Shores, CA). This system has security settings and is password protected to allow only the researcher to access. All data was and will continue to be maintained on a centralized server at the network center, which is an offsite facility operated by the University of Pittsburgh.

3.7.8 Data Analysis

The data was analyzed using the Statistical Packages for the Social Sciences (SPSS Version 21).

Descriptive statistics was used to describe data obtained from the surveys. This allowed the researcher to describe or summarize the data, such as viewing patterns of responses. Questions on faculty member's characteristics and level of interest in simulation were studied using descriptive statistics. The valid percentage was used, as it is a true and accurate result.

The Mann-Whitney U test was used on questions posed to both the faculty and students to compare statistical results. Questions on faculty member's characteristics and level of interest in simulation were studied using descriptive statistics.

An open-ended write in response question was asked of the faculty to analyze any similar responses in educational needs of development in stimulation.

An open-ended write-in response was asked of students in response to yes-or-no questions. The answers assisted the researcher to explore any patterns in delivery of simulation. These questions were coded and analyzed as qualitative data from the surveys.

3.7.9 Quantitative Analysis

The pilot study used the Mann-Whitney U test and the researcher believes that this analysis was sufficient data for this study. The survey study did not meet the requirements for a parametric test (i.e., t-test).

The Mann-Whitney U test was used to analyze data between two different results. The Mann-Whitney U is unique in that the smaller the test statistic the less likely it had occurred by chance. The analysis was used in the pilot between a set of questions from part A and part B of each survey. The statistical analysis allowed the researcher to have data to compare responses between the faculty and students.

Summaries were used to compare responses from students and faculty to understand the overall outcomes of students and best practices as performed by faculty.

The data had a valid percentage to explain the total number of non-missing, and the difference between the percentage and valid percentage might be very small. However, if there

were substantial missing responses, this delta would be larger. In this case, the valid percentage was a better reflection on the obtained results.

The insight gained from the data allowed the researcher to gain knowledge in the need for more clarity from the surveys. The purpose was to have valid data to support a development program to assist faculty in conducting simulation in an undergraduate nursing course.

The valid percentage results from each survey response were the data analysis that was used by the researcher. The valid percentage provided a true response rate collected for each categorical survey question and was the basis for the analysis.

The mean (*M*) and standard deviation (*SD*) was reported on each survey question asked to the students and the faculty. This statistical data allowed the researcher to have an average value and variability correlating with each question.

3.7.10 Qualitative Analysis

The student survey on question 12 instructed the students to write in answers. The purpose was to add insight into how students are cued during simulation. The data was collected and coded by the researcher to look for common themes. The themes helped the researcher gain information that was not captured from the survey items.

The faculty survey had a write-in response as to any other educational offerings that faculty believed they might want in a professional development course. The data was collected and coded by the researcher to look for common themes. The themes helped the researcher gain information that was not captured in the survey items. This item was added into the survey after the overview process had been completed. This was the only survey item changed from the original pilot study.

3.7.11 Assumptions

The perceptions of students and faculty members of student outcomes will vary. Faculty members will have a higher percentage of agreement that students are not adhering to communication, critical thinking, or assessment. The assumption on students' agreement on their outcomes could vary and will be dependent on their ability to perform these outcomes.

Faculty will have a high frequency agreement that they are adhering to the best practices as outlined by the INACSL. Students will somewhat agree that faculty members are adhering to the criteria.

The characteristics of faculty members will be consistent with the literature and support for development courses. However, faculty might believe their education level is sufficient for simulation and not support all aspects of development courses.

The supportive teaching learning environment will be divided as to how faculty and approach simulation. The researcher will show that faculty believes they already support a well-established teaching environment in simulation.

Part A (questions 1 through 5) and part B (questions 1 through 6) of the survey will have the following assumptions:

In part A, there will be the same distribution of agreement across the categories of both groups (faculty members and students).

In part B, there will be the same distribution of part B sum is the same across the categories of both groups (faculty members and students).

The aim is to have data that supports the need for a faculty development course with emphasis on evaluation methods.

4.0 FINDINGS

4.1 INTRODUCTION

A survey was administered to 28 students and five nursing faculty members from a large academic research institution in the mid-Atlantic region. Twenty eight students and the five nursing faculty completed the survey. The survey was conducted at a simulation center used by the university.

4.2 FACULTY SAMPLE CHARACTERISTICS

Table 6 shows information on the degrees, experience, and age of the faculty respondents all of whom were female and held doctorates. All faculty members recruited for the survey study participated in the study. No faculty members refused to participate in the study.

Table 6. Individual Faculty Characteristics

Characteristics	Faculty (n = 5)
Age	
<30 years	0 (0%)
30 - 39 years	0 (0%)
40 - 49 years	2 (40%)
50 - 59 years	3 (60%)
Years Teaching at the University of Pittsburgh	
<1 year	0 (0%)
1-5 years	2 (40%)
5-9 years	1 (20%)
10 years or more	2 (40%)

4.3 STUDENT SAMPLE CHARACTERISTICS

The students (n = 28) were recruited from the course during the summer semester at the university. The course is offered during the senior semester of the nursing program. The students were traditional undergraduate 4-year students and second degree accelerated. The sample had 24 students from the accelerated second degree program and four that were

traditional nursing students. The gender was 23 female and five male. All students recruited participated in the study. None of the students refused to participate in the study survey.

4.4 FACULTY MEMBERS LACK PREVIOUS EVALUATION COURSE

The survey asked the question if faculty had an evaluation course in graduate school or as a continuing education course. Eight percent (n = 4) did not have an evaluation course or student assessment course in graduate school. Sixty-percent (n = 3) did not have a continuing education course in simulation.

Table 7 shows the responses from the faculty members (n = 5) on the questions.

Table 7. Faculty Evaluation Courses

Survey Question	Faculty (n = 5)	
	Yes	No
Q4 Did you have an Evaluation or Student Assessment course in your graduate/doctoral studies?	1 (20%)	4 (80%)
Q5 Have you ever had a continuing education course on simulation?	2 (40%)	3 (60%)

Faculty members who chose yes were prompted to another set of choices.

The yes response to question 4 prompted the respondent to choose a) within the last five years b) longer than five years, or c) do not remember. Only one respondent (20%) answered within the last five years. The other four did not answer the question.

The yes response to question 5 had a prompt to choose the following if they had a continuing education course, a) debriefing students after a scenario, b) evaluating students

(grading simulation), c) developing simulation scenarios, and d) learning how to properly utilize the technology.

Two respondents answered the questions. One chose the response, "learning how to properly utilize the technology." The other respondent chose all four categories that were included in a continuing education course they had on simulation. The other three faculty members did not choose any of the options.

The results concluded that faculty members have had little training or education in using evaluation methods.

4.5 FACULTY MEMBERS HAVE MINIMAL INTEREST IN AN EVALUATION COURSE

Faculty members were asked to choose what courses would be of most or least interest to them if a faculty development course were offered at the university. Table 8 shows responses in areas of most and least interest to faculty members.

Table 8. Faculty Interest on Areas of Professional Development

Survey Response Choices	Faculty (n = 5)
Q6 If a faculty development course were offered on simulation, what would be of most interest to you?	
Debriefing students after a scenario	1 (20%)
Evaluating students (grading simulation)	1 (20%)
Developing simulation scenarios	2 (40%)
Learning how to properly utilize the technology	1 (20%)
Q7 If a faculty development course were offered on simulation, what would be of the least interest to you?	
Debriefing students after a scenario	1 (20%)
Evaluating students (grading simulation)	2 (40%)
Developing simulation scenarios	2 (40%)
Learning how to properly utilize the technology	0 (0%)

The results concluded that faculty members were least interested in learning evaluation methods used in simulation.

4.6 FACULTY MEMBERS PERCEIVE THEY SHOULD HAVE AN EVALUATION COURSE

Faculty members were asked if they believed faculty should have a course to assist them in evaluating students using simulation. Faculty members reported (M = 3.60) in having a development class on evaluating students with a frequency of "agree" (60%). One faculty member did not answer the questions (n = 1). Table 9 shows all the responses from faculty on if they should have a course on evaluating students.

Table 9. Faculty Perceptions of an Evaluation Course

Faculty Responses (n = 5)				
Frequency Distribution and Valid Percentage				*M* *SD*
Agree	Somewhat Agree	Somewhat Disagree	Disagree	
Q11 Nursing instructors should have a course developed to assist them in evaluating student outcomes in simulation.				
3 (60%)	1 (20%)	0 (0%)	0 (0%)	3.60 (.548)

Note. One respondent did not answer the question (n = 1)

The results concluded that faculty members believed that instructors should have a course on evaluating student outcomes in simulation.

4.7 FACULTY MEMBERS HAVE NO PREFERENCE ON STUDENTS BEING GRADED INDIVIDUALLY OR AS A GROUP

Faculty members were asked if students should be graded in a group or individually in the simulation scenario. Faculty members reported (M = 3.60) to students being graded individually and (M = 3.60) to be graded as a group with a frequency of "agree" (60%) for both questions. One faculty member did not answer the questions (n = 1). Table 10 shows the results from the survey question on grading students individually or in a group.

Table 10. Faculty Perceptions of Grading Practices in Simulation

Faculty Responses (n = 5)				
Frequency Distribution and Valid Percentage				*M* *SD*
Agree	Somewhat Agree	Somewhat Disagree	Disagree	
Q9 Students should be graded individually on a simulation scenario before graduating from nursing school.				
3 (60%)	1 (20%)	0 (0%)	0 (0%)	3.60 (.548)
Q10 Students should be graded as a group on a simulation scenario before graduating from nursing school.				
3 (60%)	1 (20%)	0 (0%)	0 (0%)	3.60 (.548)

Note. One respondent did not answer the questions (n = 1).

The faculty had no preference on grading students individually or in a group.

Faculty members were asked to write-in a response from the question, "What other supports do you suggest for instructors teaching with simulation?" Four (n = 4) faculty members wrote in a response. One (n = 1) faculty member did not write-in a response. The following are the write-in responses as they were transcribed from the surveys:

"training"

"practice for new instructors"

"using an instructor manual so that everyone has debriefing points"

"troubleshooting when the technology goes down"

4.8 FACULTY PERCEIVE STUDENTS ARE ABLE TO TRANSFER KNOWLEDGE FROM SIMULATION TO CLINICAL

Faculty members were asked if the knowledge gained from the students' experiences through simulation could be transferred to the clinical setting. Faculty members reported (M = 4.00) to students being able to transfer knowledge to the clinical setting with the frequency of "agree" (100%). Table 11 shows the results from the survey questions.

Table 11. How Faculty Perceive Student Learning – Questions from Part A

Faculty Responses (n = 5)				
Frequency Distribution and Valid Percentages				*M* *SD*
Agree	Somewhat Agree	Somewhat Disagree	Disagree	
Q1 The knowledge gained from the students experiences through the simulations can be transferred to the clinical setting.				
5 (100%)	0 (0%)	0 (0%)	0 (0%)	4.00 (.000)

The faculty members perceive students are transferring knowledge from simulation to the clinical setting.

4.9 FACULTY MEMBERS DO NOT PERCEIVE AN 8-HOUR SIMULATION DAY REPLACING AN 8-HOUR CLINICAL DAY

Faculty members were asked if students had better learning outcomes from a full 8-hour day of simulation scenarios. Faculty members reported (M = 3.00) a full day of simulation with a frequency of "agree" (40%) and "somewhat disagree" (40%). Table 12 shows the results from the survey questions.

Table 12. How Faculty Perceive Student Learning – Question from Part A

Faculty Responses (n = 5)				
Frequency Distribution and Valid Percentages				*M* *SD*
Agree	Somewhat Agree	Somewhat Disagree	Disagree	
Q4 The full 8-hour day performing simulation scenarios promote better learning outcomes for students than an entire 8 hours of clinical.				
2 (40%)	1 (20%)	2 (40%)	0 (0%)	3.00 (1.000)

In response to this question, faculty members did not perceive a full day of simulation was comparable to a full day of clinical.

4.10 FACULTY PERCEIVE STUDENTS ARE DEMONSTRATING CRITICAL THINKING AND COMMUNICATION SKILLS

Faculty members were asked about student outcomes during simulation. The question regarding how students demonstrate their ability to communicate with other providers (M = 3.80) and how students demonstrated their critical thinking skills (M = 3.80) elicited the highest frequency for "agree" (80%).

The questions on how well students were prepared to provide rationales (M = 3.60), demonstrate their ability to obtain pertinent subjective and objective data (M = 3.60), and approach simulation as a serious evaluation (M = 3.60) elicited the lowest frequency for "agree" (60%). Table 13 shows the results from the questions on student outcomes during the simulation scenario.

Table 13. How Faculty Perceive Student Outcomes – Questions from Part B

Faculty Responses (n = 5)					
Frequency Distribution and Valid Percentages				*M*	*SD*
Agree	Somewhat Agree	Somewhat Disagree	Disagree		
Q1 Students were prepared to provide specific rationales for their actions during the simulation scenario.					
3 (60%)	2 (40%)	0 (0%)	0 (0%)	3.60	(.548)
Q2 Students demonstrated their ability to communicate with the other providers of the health care team.					
4 (80%)	1 (20%)	0 (0%)	0 (0%)	3.80	(.447)
Q3 The students demonstrated their ability to obtain pertinent subjective and objective data and report findings to the instructor.					
3 (60%)	2 (40%)	0 (0%)	0 (0%)	3.60	(.548)
Q5 The students demonstrated their critical thinking skills learned through the nursing program during the simulation.					
4 (80%)	1 (20%)	0 (0%)	0 (0%)	3.80	(.447)
Q7 The students approached the simulation experience as a serious evaluation of their abilities.					
3 (60%)	2 (40%)	0 (0%)	0 (0%)	3.60	(.548)

Faculty members strongly perceived that students are demonstrating critical thinking skills learned throughout the nursing program and using them during simulation.

4.11 FACULTY MEMBERS PERCEIVE THEY DID NOT CLEARLY COMMUNICATE OBJECTIVES AND OUTCOMES TO STUDENTS

Faculty members were asked questions on their best practices as outlined by INACSL. The question on faculty supporting a safe learning environment (M = 4.00) elicited the highest frequency for "agree" (100%).

The question on faculty provides constructive feedback and discussion (M = 3.60) elicited a lower frequency for "agree" (60%).

The question on faculty clearly communicating objectives and expected outcomes (M = 3.40) elicited a low frequency for "agree" (40%). Table 14 shows the results from the questions in part A of the survey on faculty perceptions of best practices.

Table 14. How Faculty Rate Best Practices – Questions from Part A

Faculty Responses (n = 5)				
Frequency Distribution and Valid Percentages				*M* *SD*
Agree	Somewhat Agree	Somewhat Disagree	Disagree	
Q2 Faculty supports a safe learning environment that advocates active learning.				
5 (100%)	0 (0%)	0 (0%)	0 (0%)	4.00 (.000)
Q3 Faculty clearly communicates the objectives and expected outcomes to the participants of the simulation scenarios.				
2 (40%)	3(60%)	0 (0%)	0 (0%)	3.40 (1.000)
Q5 Faculty provides constructive feedback and discussion after the simulation scenarios.				
3 (60%)	2 (40%)	0 (0%)	0 (0%)	3.60 (.548)

Faculty members overwhelming perceived they were providing a safe learning environment. However, they perceived they were not clearly communicating objectives and expected outcomes to the students.

4.12 FACULTY MEMBERS WERE ABLE TO ASSESS STUDENTS' ACQUISITION OF KNOWLEDGE

Faculty members were asked questions on their best practices as outlined by INACSL. The question on how the faculty was able to assess the students' acquisition of knowledge and skills (M = 3.80) elicited the highest frequency for "agree" (80%).

The question on faculty modeled professional integrity during the individual scenario (M = 3.20) elicited the lowest frequency for "agree" (40%).

Table 15 shows the results from the questions in part B of the survey on faculty perceptions of best practices.

Table 15. How Faculty Rate Best Practices – Questions from Part B

Faculty Responses (n = 5)					
Frequency Distribution and Valid Percentages				Mean	SD
Agree	Somewhat Agree	Somewhat Disagree	Disagree		
Q4 The instructor modeled professional integrity during the individual scenario.					
2 (40%)	2 (40%)	1 (20%)	0 (0%)	3.20 (.837)	
Q6 The faculty member was able to assess the students' acquisition of knowledge and skills during the individual scenario.					
4 (80%)	1 (20%)	0 (0%)	0 (0%)	3.80 (.447)	

Faculty members perceived they were able to assess students' acquisition of knowledge during the individual scenario.

4.13 STUDENTS PERCEIVE THEY ARE ABLE TO TRANSFER KNOWLEDGE FROM SIMULATION TO THE CLINICAL SETTING

Students were asked if they were able to gain knowledge from the simulation experience and transfer it to the clinical setting. The response (M = 3.57) had a higher frequency for "agree" (57.1%) and a lower frequency for "somewhat agree" (42.9%).

Table 16 shows the results from the question on transferring knowledge.

Table 16. Students Perceive they are Transferring Knowledge – Questions from Part A

Student Responses (n = 28)					
Frequency Distribution and Valid Percentages				*M*	*SD*
Agree	Somewhat Agree	Somewhat Disagree	Disagree		
Q1 The knowledge gained through the simulation experience can be transferred to the clinical setting.					
16 (57.1%)	12 (42.9%)	0 (0%)	0 (0%)	3.57	(.504)

The students perceived they are gaining knowledge through simulation and are able to transfer it to the clinical setting.

4.14 STUDENTS PERCEIVE AN 8-HOUR DAY OF SIMULATION CAN REPLACE AN 8-HOUR DAY OF CLINICAL

Students were asked if the full 8-hour day of simulation promoted better learning outcomes than an entire 8-hour day of clinical. This was in response to the question asked in part A of the student survey. The response (M = 3.50) was higher with the frequency for "agree" (57.1%), "somewhat agree" (35.7%), and "somewhat disagree" (7.1%).

Table 17 shows the results regarding students' perceived value of simulation in their learning from part A of the survey.

Table 17. Students Perceive the Value of Simulation – Questions from Part A

Student Responses (n = 28)				
Frequency Distribution and Valid Percentages				*M* *SD*
Agree	Somewhat Agree	Somewhat Disagree	Disagree	
Q4 The full 8-hour day of simulation scenarios promote better learning outcomes for students than an entire 8 hours of clinical.				
16 (57.1%)	10 (35.7%)	2 (7.1%)	0 (0%)	3.50 (.638)

Students were in agreement that an 8-hour day of simulation could replace an 8-hour clinical day.

4.15 STUDENTS PERCEIVE THEY ARE USING CRITICAL THINKING SKILLS LEARNED THROUGHOUT THE PROGRAM

Students were asked about their perceived value in learning with simulation. This was in response to the questions asked in part B of the student survey.

The student response to the question regarding the individual scenario that allowed them to use the critical thinking skills they learned in the nursing program (M = 3.82) had the highest frequency for "agree" (82.1%). The instructor assessed my attitudes and behaviors during the simulation scenario (M = 3.64) had the second highest frequency for "agree" (71.4%) in this section of the survey.

The responses from the students providing specific rationales (M = 3.54) and the question on the individual scenario allowing them to obtain pertinent subjective and objective data (M = 3.54) had the same frequency for “agree” (64.3%) in this section of the survey.

The response for the question, I felt confident in my ability to perform the individual scenario (M = 3.43) had the lowest frequency for “agree” (50%) in this section of the survey.

Table 18 shows the results from the questions on students’ perceived value of simulation in their learning from part B of the survey.

Table 18. Students Perceive the Value of Simulation – Questions from Part B

Student Responses (n = 28)					
Frequency Distribution and Valid Percentages				*M*	*SD*
Agree	Somewhat Agree	Somewhat Disagree	Disagree		
Q1 I was able to provide specific rationales for my actions during the simulation scenario.					
16 (57.1%)	11 (39.3%)	1 (3.6%)	0 (0%)	3.54	(.576)
Q2 The individual simulation scenario allowed me to demonstrate my ability to communicate with the other providers of the health care team.					
13 (46.4%)	11 (39.3%)	3 (10.7%)	1 (3.6%)	3.29	(.810)
Q3 The individual scenario allowed me to obtain pertinent subjective and objective data and report findings to the instructor.					
18 (64.3%)	7 (25%)	3 (10.7%)	0 (0%)	3.54	(.693)
Q5 The individual scenario allowed me to use the critical thinking skills learned through the nursing program during the simulation.					
23 (82.1%)	5 (17.9%)	0 (0%)	0 (0%)	3.82	(.390)
Q7 The instructor assessed my attitudes and behaviors during the individual scenario.					
20 (71.4%)	6 (21.4%)	2 (7.1%)	0 (0%)	3.64	(.621)
Q11 I felt confident in my ability to perform the individual scenario.					
14 (50.0%)	12 (42.9%)	2 (7.1%)	0 (0%)	3.43	(.634)

Students agree that the individual scenario allowed them to use their critical thinking skills learned throughout the nursing program during simulation. They also agreed that faculty members were able to assess their attitudes and behaviors during the individual scenario.

4.16 STUDENTS PERCEIVE FACULTY MEMBERS ARE PROVIDING A SAFE LEARNING ENVIRONMENT

Students were asked if faculty were adhering to the best practice model as outlined by INACSL. The following questions were asked in part A of the student survey.

The students response to the question that faculty supports a safe learning environment that advocates active learning (M = 3.93) had the highest frequency for “agree” (92.91%).

The student response to the question that the faculty provides constructive feedback and discussion after the simulation scenarios (M = 3.75) had a strong frequency for “agree” (78.6%).

The response for clearly communicating the objectives and expected outcomes to the participants (M = 3.46) had a lower frequency for “agree” (53.6%).

Table 19 shows the results from the questions on faculty adhering to best practices as outlined in part A of the survey.

Table 19. Students Perceptions that Faculty is adhering to the Best Practice Model

Student Responses – Part A (n = 28)					
Frequency Distribution and Valid Percentages				*M*	*SD*
Agree	Somewhat Agree	Somewhat Disagree	Disagree		
Q2 The faculty supports a safe learning environment that advocates active learning.					
26 (92.9%)	2 (7.1%)	0 (0%)	0 (0%)	3.93	(.262)
Q3 The faculty clearly communicated the objectives and expected outcomes to the participants of the simulation scenarios.					
15 (53.6%)	11 (39.3%)	2 (7.1%)	0 (0%)	3.46	(.637)
Q5 The faculty provides constructive feedback and discussion after the simulation scenarios.					
22 (78.6%)	5 (17.9%)	1 (3.6%)	0 (0%)	3.75	(.518)

Students perceive faculty members are supporting a safe learning environment that promotes active learning. The students also perceive the faculty members are providing constructive feedback and discussion after the simulation scenarios.

4.17 STUDENTS PERCEIVE FACULTY ARE EFFECTIVELY ASSESSING THEIR KNOWLEDGE AND SKILLS

Students were asked if faculty were adhering to the best practice model as outlined by INACSL. The following questions were asked in part B of the student survey.

The student response to the question that faculty modeled professional integrity during the individual scenario (M = 3.93) and the instructor assessed my knowledge and skills had a high frequency for “agree” (92.9%).

The student responses to the question that the faculty was well organized and prepared (M = 3.82) had a strong frequency for “agree” (82.1%).

The response for the instructor assessed my attitudes and behaviors (M = 3.64) had a lower frequency for “agree” (71.4%).

Table 20 shows the results from the questions on faculty adhering to best practices as outlined in part A of the survey.

Table 20. Students Perceptions that Faculty is adhering to the Best Practice Model

Student Responses – Part B (n = 28)					
Frequency Distribution and Valid Percentages				*M*	*SD*
Agree	Somewhat Agree	Somewhat Disagree	Disagree		
Q4 The instructor modeled professional integrity during the individual scenario.					
26 (92.9%)	2 (7.1%)	0 (0%)	0 (0%)	3.93	(.262)
Q6 My instructor assessed my knowledge and skills during the individual scenario.					
26 (92.9%)	2 (7.1%)	0 (0%)	0 (0%)	3.93	(.262)
Q7 The instructor assessed my attitudes and behaviors during the individual scenario.					
20 (71.4%)	6 (21.4%)	2 (7.1%)	0 (0%)	3.64	(.621)
Q8 The instructor was well-organized and prepared during the individual scenario.					
23 (82.1%)	5 (17.9%)	0 (0%)	0 (0%)	3.82	(.390)

The students overwhelming perceive faculty members were assessing knowledge and skills during the individual scenario. Students perceived faculty members modeled professional integrity and were well organized.

4.18 STUDENTS ARE NOT INTIMIDATED BY HAVING FACULTY IN THE ROOM DURING THE INDIVIDUAL SIMULATION SCENARIOS

The following questions were asked of the students to determine if the student was cued during the individual simulation scenario. The responses are specific to the evaluation process of the simulation portion of the course.

The question asked of the students if the nursing instructor in the room during the individual scenario made the simulation experience less intimidating. The response (M = 3.07) had a high frequency for “agree” (50%) and a low frequency for “disagree” (7.1%).

The question asked of the students if the nursing instructor in the room during the individual scenario made the simulation experience more intimating the response (M = 1.96) had a low frequency for “agree” (14.3%) and a higher frequency “disagree” (50%).

Table 21 shows the responses to the questions on faculty evaluating students in the simulation room.

Table 21. Students Perceptions of Faculty Evaluating while in the Simulation Room

Student Responses (n = 28)					
Frequency Distribution and Valid Percentages				*M*	*SD*
Agree	Somewhat Agree	Somewhat Disagree	Disagree		
Q9 The nursing instructor in the room during the individual simulation scenario made the experience less intimidating.					
14 (50.0%)	4 (14.3%)	8 (28.6%)	2 (7.1%)	3.07 (1.052)	
Q10 The nursing instructor in the room during the individual simulation scenario made the experience more intimidating.					
4 (14.3%)	5 (17.9%)	5 (17.9%)	14 (50.0%)	1.96 (1.138)	

The students perceived that the instructor in the room during the individual simulation scenario was not intimidating.

4.19 STUDENTS RESPONSED ON WHY THEY WERE CUED DURING THE INDIVIDUAL SIMULATION SCENARIO

The question was asked of students if the nursing instructor had to cue them during the individual simulation scenario, which one would describe the cues you were given. The answer had a yes or no response and students that answered yes were prompted to choose from five responses.

Eight students answered the question, four students chose one of the responses, and four students chose other.

Table 22 shows the responses from students on why they were cued during the individual scenario.

Table 22. Write-in Responses from Students

Number	Question	*n* = 8
1	I froze at the start and needed assistance to begin the scenario	1 (3.6%)
2	I was unable to anticipate the physician orders.	0 (0%)
3	I forgot the treatment protocol for the situation.	3 (10.7)
4	I was unable to detect the treatment protocol for the patient.	0 (0%)
5	Other (please specify)	4 (14.3)

The students had varying responses regarding why they were cued by the instructor. The results show that more students forgot the treatment protocol.

The four students who chose other had a write-in response to the question on why the instructor had to cue them during the individual scenario. The responses were transcribed in their entirety and are listed below:

> "The instructor was standing in front of me, which was different than practice so it threw me off and I forgot to call the doctor"
>
> "During reassessment I forgot to ask the patient if she felt better."
>
> "I stopped at the medications she also wanted to know EKG and troponin. She just asked "what else?" to prompt me to continue."
>
> "I would have liked to have been cued."

4.20 COMPARING FACULTY AND STUDENT RESPONSES SHOWED NO STATISTICAL SIGNIFICANCE

4.20.1 Comparison of Sum Scores Part A

A Mann-Whitney U was conducted on questions 1, 2, 3, 4, and 5 in Part A of both the student and faculty survey. The hypothesis was there would be a statistical difference in the responses between the student and faculty survey results. The significance level used was $p = 0.05$. The independent samples using the Mann-Whitney U revealed no statistical significance between the two groups ($p = 0.789$).

4.20.2 Comparison of Sum Scores Part B

The Mann-Whitney U was conducted on questions 1, 2, 3, 4, 5, 6, and 7 of the faculty survey responses and questions 1, 2, 3, 4, 6, 7, 8 of the student survey responses. The hypothesis was there would be a statistical difference in the responses between the student and faculty survey results. The significance level used was $p = 0.05$. The independent samples using the Mann-Whitney U revealed no statistical significance between the two groups ($p = 0.903$).

4.21 RESULTS SUMMARY

The results revealed that faculty members are adhering to a best practice model and students are demonstrating their ability to perform using high-fidelity simulation. The results revealed a few areas that are worth discussing.

The results revealed a high response from faculty members who did not have an evaluation course. Even though faculty members believed an evaluation course was necessary, they were not interested in having a course on evaluation methods.

Faculty members perceive students are gaining knowledge and are able to use their critical thinking skills that they have learned throughout the nursing program and apply it to simulation. Faculty members do not perceive that a full-day of simulation can replace a full-day of clinical in an acute care setting.

Students also perceive they are able to transfer knowledge from simulation to the clinical setting and that their critical thinking skills learned throughout the nursing program are utilized in simulation. Students perceive that an 8-hour day of simulation can replace an 8-hour day of clinical.

The results revealed that both faculty members and student's perceive objectives and student outcomes are not clearly communicated to the students.

The overall comparison of faculty members and students on faculty best practice and student outcomes revealed no statistical significance.

4.22 LIMITATIONS

The following limitations have been identified and outlined by the researcher from this survey study.

A limitation to this survey was the small sample size for both students (n = 28) and faculty members (n = 5). Mertens (2012) discusses sample size and the smaller the sample size the more variability; however, this yields to less sensitivity. The issue with a larger sample size is time to conduct the survey and potential cost associated with obtaining the sample (p. 333). The researcher was aware of this sample and made the assumptions based on the smaller size.

The survey was conducted in one course at one large academic research university. The course is offered three times in an academic year and students and clinical instructors can vary each semester. The characteristics of faculty and students can change each semester.

Twenty-four of the students recruited for this study were part of the accelerated second degree nursing program. The other four were traditional students. Accelerated students have their own personality traits; they are more engaged, however can be quizzical and challenging to faculty (Lindsay, 2009). They are over achievers and question any and all aspects of the nursing program. Their input into the survey could be a limitation since their responses could promote different perceived outcomes than the traditional students.

The five faculty members (n = 5) who completed the survey were all doctoral prepared faculty members. Responses from faculty members who do not hold a doctorate could have elicited different responses in correlation with support for a development program.

The other limitation was the use of a survey to yield data on perceptions in simulation. Since the sample size of faculty members was small (n = 5) it would have been beneficial to interview faculty members on their perceptions. The process of interviewing faculty members

could have elicited more in-depth responses that were not exhausted in the survey questionnaire (Babbie, 2012).

5.0 CONCLUSIONS AND DISCUSSION

The use of high-fidelity simulation will continue to challenge schools of nursing. The difficulties range from an aging nursing faculty to many of the changes facing health care. The ability to embed this pedagogical approach into the curriculum will take sincere efforts by nursing faculty.

The survey revealed faculty members are adhering to best practices as outlined by INACSL and are able to perceive student outcomes. Faculty members perceive the transfer of knowledge from simulation to clinical is beneficial for the student. However, they do not perceive that a full day of simulation can replace a full day of clinical in an acute care setting. As new research is beginning to surface on the benefits of simulation, it will be imperative for faculty members to support this method of instruction in the curriculum.

Currently, the NCSBN does not support specific hours of simulation. The AACN and the NLN both support simulation as an adjunct to students learning. The changes in health care will force schools of nursing to find other methods of instruction.

Faculty members have raised concerns about adding simulation to already heavy workloads. The notion of finding the time to design scenarios and administer them to students has been met with some resistance. However, faculty members need to rise above and utilize the tools and resources, which have already been created. Researchers have been studying the

theoretical framework using simulation and have created new evaluation instruments and methods to evaluate student outcomes.

Students embrace the technology of simulation and the real-life scenarios. The current study examined perceptions of faculty and nursing students using high-fidelity simulation in an undergraduate program. Faculty members are interested in learning different areas of simulation and students embrace the learning simulation has to offer them. Faculty adheres to a best practice model and express interest in the different methods involved in simulation. The following sections provide an analysis of this survey study organized by the main research questions.

5.1 HOW DO FACULTY MEMBERS PERCEIVE THE VALUE OF USING HIGH-FIDELITY SIMULATION IN STUDENT LEARNING?

High-fidelity simulation has become an expected feature within undergraduate nursing programs across the country. Students applying to schools of nursing assume simulation will be offered as part of the nursing curriculum. Experts in the field of simulation anticipate the use of simulation to measure student outcomes.

Adhering to the AACN, *Essentials of Baccalaureate Education for Nursing Practice* (AACN, 2014), it is important for graduates of nursing programs to apply safe and effective care to all patients. This is a benchmark as outlined by the Joint Commissions Journal on *Quality and Patient Safety* (2014). Their statement adheres to the importance of successful simulation programs for promising student outcomes (p. 21).

The AACN does not take a position on requiring simulation within a nursing program; however, they support the use of simulation as a pedagogical approach to student teaching (Stanley, 2014).

Faculty members are not always offered formal training and are apprehensive in evaluating students using simulation. The results from the survey revealed faculty had a lack of training on evaluation methods used in simulation. An effective evaluation process is imperative for successful student outcomes. Unfortunately, faculty members were not interested in learning evaluation methods as part of a development course. Faculty members who do not have a clear understanding on how to evaluate students will lack in effectively communicating the objectives.

As stated in the literature review, nursing schools rely on part-time faculty to teach the clinical portion of the nursing curriculum. The same nursing faculty members who fill the void in the clinical setting are also teaching in the simulation lab.

However, nursing instructors do support simulation if there is adequate support for the technology (Howard et al., 2010). The survey reflects responses from faculty members of the importance to have training to properly utilize the technology.

The survey also had responses from faculty regarding their interest in evaluating and debriefing students. These two concepts are essential for successful student outcomes using simulation. As stated by Tanner (2011), educating faculty on the use of rubrics and expectations using simulation as pedagogy will be essential as schools of nursing are facing new educational challenges.

However, faculty members do not always have the correct modeling to implement simulation within the curriculum (Adamson, 2010). A somber reality facing schools is the current nursing faculty shortage. As the baby boomers retire, it will cause a large gap in the

current education system (Yordy, 2006). Faculty members who embrace simulation and are interested in learning concepts and application will be important to help close the gap.

Currently, the university used in this survey is in the process of revising their current undergraduate nursing curriculum. One of the focuses for this curriculum change has been the move to a value-based health care model. This is a model being set forth by many health care systems to monitor cost, quality, and outcomes (Fennimore, 2014). This model outlines a different focus for health care.

The hallmark of the clinical education for nursing students has always been in the acute care setting. While under the guidance of an instructor, the students learn the concepts of caring for patients in this setting. The changing health care model has fewer patients in this setting and a decrease in clinical sites for students. Schools of nursing will need to assess the need for alternatives such as simulation to replace the potential decrease of clinical hours. It will be important to have this embedded into the curriculum as an adjunct to learning in the clinical setting. As stated by Stanley (2014) the caveat to simulation will be to have faculty properly trained to deliver this pedagogical approach.

A newly published landmark study conducted by the National League of Nursing (NLN) is finding the evidence to support simulation within the curriculum. NLN is committed to delivering improved, enhanced, and expanded services . . . [and] championing the pursuit of quality nursing education . . . (National League of Nursing, 2013).

The need for simulation as an adjunct to learning and replacing *some* clinical hours is beginning to be researched on a national level. Hayden, Smiley, Alexander, Kardong-Edgren, and Jeffries (2014) published a longitudinal, randomized, controlled trial using nursing programs from across the United States. This study is the most comprehensive of its kind ever conducted

on replacing clinical hours with simulation. The study was conducted with nursing students from 2010 to 2013. The aim of the study was to compare replacing traditional clinical education with simulation.

The control group continued to have the traditional clinical experience with no more than 10 percent of their clinical hours replaced by simulation. One group had 25 percent of their clinical hours replaced by simulation and another had 50 percent replaced by simulation. The outcome of this study showed no difference in NCLEX pass rates, clinical competency, or nursing knowledge from students (Hayden et al, 2014, p. 56).

The research in this area will continue as schools of nursing are faced with challenges of finding quality clinical sites for students. The research has not disproven simulation replacing clinical hours however, the need for more research in this area will need to continue before changes can be fully implemented.

As schools review their current curricula, this evidence will support a higher usage of simulation. Faculty members will need to be supported in efforts to add simulation into the nursing curriculum. Faculty members will have to demand the education and training to support the application and implementation of simulation within the nursing curriculum.

The research is beginning to support the need to use simulation as an integral part of the nursing curriculum. In lieu of the current research, schools of nursing are beginning to develop programs to train faculty in properly utilizing simulation. Jansen et al., (2010) supported a train-the-trainer approach for faculty to share knowledge and expertise. Jones et al., (2013) used a variety of methods in a summer training fellowship program. Education ranged from hands-on training to using on-line learning. The survey depicted that nursing faculty are interested in learning how to debrief and create scenarios for students using simulation.

The survey revealed faculty perceived students gained knowledge in simulation, which could be transferred to the clinical setting. An option moving forward with curriculum changes could be replacing clinical hours with simulation. A comprehensive training program would need to be developed and implemented to add this pedagogy throughout the curriculum.

5.2 WHAT DO FACULTY MEMBERS VIEW AS THE MOST AND LEAST INTERESTING ASPECT OF FACULTY DEVELOPMENT IN TEACHING USING SIMULATION?

The survey resulted in faculty members perceptions on what interested them the most if a development course in simulation was offered. The researcher was concerned with the result of evaluation as the least interest to faculty members. The process of evaluating students using simulation is an integral part of the course that is offered at the university to senior nursing students.

Evaluation has been met with some controversy in the nursing literature (Bensfield et al, 2012). However, new studies have been conducted on high-stakes evaluation and its impact on nursing education.

The evaluation process conducted at the school of nursing for this study was not considered high-stakes evaluation. High-stakes evaluations are for "those evaluated for significant consequences, impact, or a students' grade (Willhaus, Burleson, Palaganas, & Jeffries, 2014, p. e177). The evaluation process for the students in the survey was in combination with a written and on-line test.

Willhaus et al., (2014) in their study of developing scenarios used for high-stakes evaluation, discuss the difficulties in creating a process of standardization for faculty members.

Faculty members need to have a comprehensive understanding to implement this form of evaluation. The survey results revealed that faculty members did not perceive they were clearly communicating objectives and outcomes to the students. Clear and concise communication of objectives and outcomes will be important as schools of nursing consider using high-stakes evaluation (Willhaus et al, 2014).

As stated in the literature review, medicine and anesthesiology have already implemented forms of high-stakes evaluation into their programs (Feldman et al., 2012). The research on medical evaluation is within the last five years and continued research will convey whether this form of evaluation is effective.

The research into high-stakes evaluation for nursing is still in its infancy; however, as it continues to become widely accepted in nursing programs, the more important it will be to have faculty members properly educated to implement this form of evaluation.

The faculty interest in debriefing and creating scenarios is a positive outcome. Jones et al., (2007) conducted a research study on comfort levels with nursing instructors who were using simulation for teaching and evaluating skills. The study found that faculty members need to have more comprehensive knowledge to elicit active learning from the students. Debriefing techniques can assist the faculty member to have students participate in active learning. Interest in this development technique and skill is imperative for successful student outcomes.

Jones et al., (2007) also found that assistant professors were more comfortable than those who held the position of instructor. This could be due to the fact that instructors are usually part-time and are not as involved with curriculum development. The university used in this study has

required all full-time clinical faculty members to have a doctorate degree. The characteristics of the faculty recruited for this survey all had their doctorate.

The survey was able to give the researcher insight into what faculty members are most interested in and what obstacles must be overcome to implement a faculty development program. Even though debriefing and creation of scenarios was of the most interest, evaluation methods will have to be a focus for training faculty members.

5.3 HOW DO STUDENTS PERCEIVE THE VALUE OF USING HIGH-FIDELITY SIMULATION IN THEIR LEARNING?

The importance of learning outcomes for students will continue to play an integral role in simulation. There is continued evidence to support student learning and simulation as a pedagogical approach within the nursing curriculum. As mentioned previously, the study conducted by the NLN showed no significance in student outcomes using simulation versus traditional clinical education (Hayden et al., 2014).

The survey resulted in students' perception of their knowledge gained through the simulation experience. The students perceive that knowledge can be transferred from simulation to the clinical setting. This data is imperative of how the nursing student recognizes simulation in their development throughout the nursing program.

Overwhelmingly, the survey showed students perceived having the instructor in the room during the individual scenario was less intimidating. This was a surprising finding and supports the benefit of having the instructor in the room while the student is performing the scenario. This is in support of the theory and how simulation is delivered. The ability to have

the nursing faculty “go by the script” and not cue students can be a challenge and supports the need for standardization in the evaluation process (Willhaus et al., 2014, p. e179).

Students perceived faculty members as providing a safe environment and modeling professional integrity. As outlined by INACL, the ability to promote positive student outcomes in simulation is to have a safe environment to perform the scenarios. The survey revealed both students and faculty members perceived that the nursing instructors were adhering to the best practice model.

An area of concern was with the communication of objectives and expected outcomes. Willhaus et al., (2014) mentions issues with faculty misreading scripts or not being aware of the potential objectives of the scenario. In addition, the faculty member must play many roles within the simulation and this can prove to be difficult in relating the outcomes. However, students can have anxiety and difficulty in understanding the realism of the scenario (Howard, 2010). The ability to expand on the realism and focus on the student outcomes can be an area to concentrate on when developing a program. As previously mentioned, the faculty will need to learn how to clearly communicate objectives and become familiar with the different scenarios.

5.4 HOW DO FACULTY MEMBERS AND STUDENTS AGREE OR DISAGREE OF FACULTY BEST PRACTICE AND STUDENT OUTCOMES USING SIMULATION?

The survey results, which compared responses from students and faculty, showed no differences in their perceptions of best practices or student outcomes. The overall results were very positive from the surveys. As stated, it will be imperative for the researcher to develop a course for

faculty members to include methods to communicate the objectives and expected outcomes of students.

The survey questions were framed from the Creighton Simulation Evaluation Instrument (C-SEI™). The researcher believes these areas need to be expounded on to develop a training program on simulation. The C-SEI™ has been used by the NLN in their research of using simulation throughout the nursing curriculum. The tool is valid and reliable and the developers have created methods to train new faculty using the C-SEI™. The researcher would like to use this instrument and educational materials to train new faculty in evaluating simulation scenarios.

Faculty best practices showed no statistical difference between the student and faculty members. The ability of the faculty members to perform using the highest standards set by INACSL is necessary for successful student outcomes. Faculty members already adhering to this practice will be supportive of efforts set forth on using simulation.

5.5 IMPLICATIONS FOR FUTURE RESEARCH

The survey results yielded very favorable information in regards to perceptions from faculty members and students on high-fidelity simulation. The information gained from the survey results support a need for a professional development program.

The researcher would want to obtain more information from faculty members. An approach by the researcher would be the use of observation. Babbie (2012) discusses using observation to interview subjects for their participation in a project (p. 70). This would be an effective method to use at the simulation center.

The simulation center where this survey was conducted and has rooms equipped with simulation equipment. The control room is located behind a one-way mirror. During the evaluation process, the faculty member and student are in the simulation room together. The faculty member has the computer in the room to control the scenario. The control room can be an observation place for the researcher.

The ability to interview more faculty members in the university would be highly beneficial to future researchers who could design questions for part-time and full-time faculty at the university. This knowledge will allow the researcher to plan a program faculty members believe will be beneficial to their learning

Currently, the NSBON does not have specific requirements for clinical or simulation hours. The AACN has made recommendations for nursing schools to use simulation in their programs. Recommendations are new and based on recent research. As more evidence supports using simulation, the board and governing body will need to work together to assist schools in overseeing these changes.

As cost can be a barrier to implementing simulation, grant funding is available to assist schools of nursing as they decide to implement a simulation program. The researcher wants to obtain a grant to successfully implement a development program for faculty members. The program would assist veteran and novice faculty in successfully implementing simulation within the nursing curriculum. The key is for faculty members to have the skills to effectively evaluate students in using simulation. Clearly communicating objectives and student outcomes will be imperative for students to succeed using this method of evaluating performance.

However, the health care system is changing and the accrediting bodies are beginning to support innovative methods of instruction. The subject of evaluating students using simulation is

a topic of concern and many in the field of simulation are beginning to discuss this on a national level. The AACN is supporting simulation and the NLN is conducting research into replacing clinical hours with simulation.

Simulation can never fully replace the richness and depth that the clinical experience has to offer. Simulation cannot replace a student's elation when they witness for the first time the birth of a baby. It cannot replicate the touch or feel from holding a child's hand while they receive a shot; it cannot replace the nurse caring for the patient who is dying of cancer. However, simulation can teach students how to handle emergencies or plan care for various treatment modalities. Simulation should always be considered an adjunct part of the nursing curriculum. As more research into using simulation is conducted and health systems look to schools of nursing to produce nurses who are prepared to handle emergency situations; this pedagogy will be an expected part of all nursing curriculums.

The nursing profession is considered an art and a science and the goal of a nursing education is to graduate nurses who will give safe and compassionate care to their patients. In turn, faculty members must adhere to the best practices and give that same care in teaching their students. The goal is to prepare new graduate nurses for the realism of the health care system. Preparing faculty members to deliver this pedagogy will be essential as the future of health care continues to evolve.

APPENDIX A

Instrument Number: 1170

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Study ID: 268

FOR OFFICE USE ONLY:

A SURVEY OF NURSING STUDENTS' PERCEPTIONS ON HIGH-FIDELITY SIMULATION

Today's Date: ___ / ___ / ____
(month) (day) (year)

PART A: The following questions are based on the full 8-hour day of WISER simulations.

	Disagree 1	Somewhat disagree 2	Somewhat agree 3	Agree 4
1. The knowledge gained through the WISER simulation experience can be transferred to the clinical setting.	○	○	○	○
2. The faculty supported a safe learning environment that advocated active learning.	○	○	○	○
3. The faculty clearly communicated the objectives and expected outcomes to the participants of the simulation scenarios.	○	○	○	○
4. The full day of WISER simulation scenerios prepared me to recognize an emergency situation on the clinical unit.	○	○	○	○
5. The faculty provided constructive feedback and discussion after the simulation scenerios.	○	○	○	○

PART B: The following questions are based on the individual simulation scenario conducted at WISER.

	Disagree 1	Somewhat disagree 2	Somewhat agree 3	Agree 4
1. I was able to provide specific rationales for my actions during the simulation scenario.	○	○	○	○
2. The individual simulation scenario allowed me to demonstrate my ability to communicate with other providers of the healthcare team.	○	○	○	○
3. The individual scenario allowed me to obtain pertinent subjective and objective data and report my findings to the instructor.	○	○	○	○

(continued on the following page ...)

ID Number: _ _ _ _ _ _ _ _ _ _ (for internal use only) Date: _ _ / _ _ / _ _ (for internal use only) Study ID: 2 6 8

(continued)

PART B: The following questions are based on the individual simulation scenario conducted at WISER.

	Disagree 1	Somewhat disagree 2	Somewhat agree 3	Agree 4
4. The instructor modeled professional integrity during the individual scenario.	○	○	○	○
5. The WISER individual simulation scenario allowed me to use the critical thinking skills I have acquired throughout nursing school.	○	○	○	○
6. My instructor assessed my knowledge and skills during the individual scenario.	○	○	○	○
7. The instructor assessed my attitudes and behaviors during the individual scenario.	○	○	○	○
8. The instructor was well-organized and prepared during the individual simulation.	○	○	○	○
9. The nursing instructor in the room during the WISER individual simulation scenario made the experience *less* intimidating.	○	○	○	○
10. The nursing instructor in the room during the WISER individual simulation scenario made the experience *more* intimidating.	○	○	○	○
11. I felt confident in my ability to perform the individual scenario.	○	○	○	○

12. Did your nursing instructor have to cue you during the WISER individual simulation scenario?

○ 1 **Yes** ----> **a. Which one of the following BEST describes the clues you were given:**

○ 2 **No**

- ○ 1 I froze at the start and needed assistance to start
- ○ 2 I was unable to anticipate the physician order
- ○ 3 I forgot the treatment protocol for the situation
- ○ 4 I was unable to detect the assessment changes in the patient
- ○ 5 Other; specify: _____

(for office use only) ☐☐

APPENDIX B

Instrument Number: 1172

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Study ID: 268

FOR OFFICE USE ONLY:

A SURVEY OF NURSING FACULTY PERCEPTIONS ON HIGH-FIDELITY SIMULATION

Today's Date: ___ / ___ / ____
(month) (day) (year)

Please complete the following survey on simulation.

1. What is your highest degree earned?
   - ○ 1 Bachelors
   - ○ 2 Masters
   - ○ 3 Doctorate
   - ○ 4 Other; specify: _____

2. What is your age category?
   - ○ 1) < 30 years
   - ○ 2) 30 - 39 years
   - ○ 3) 40 - 49 years
   - ○ 4) 50 - 59 years
   - ○ 5) 60 years or more

3. How long have you been teaching for the University of Pittsburgh School of Nursing?
   - ○ 1) < 1 year
   - ○ 2) 1 - 5 years
   - ○ 3) More than 5 years but less than 10
   - ○ 4) 10 years or more

4. Did you have an Evaluation or Student Assessment course in your graduate/doctoral studies?
   - ○ 1 Yes --> a. When did you complete the course:
     - ○ 1 Within the last 5 years
     - ○ 2 Longer than 5 years
     - ○ 3 Do not remember
   - ○ 2 No

5. Have you ever had a continuing education course on simulation?
   - ○ 1 Yes --> Did it include any of the following? (choose all that apply.)
     (1)
     - ○ a. Debriefing students after a scenario
     - ○ b. Evaluating students (grading simulation)
     - ○ c. Developing simulation scenarios
     - ○ d. Learning how to properly utilize the technology
   - ○ 2 No

6. If a faculty development course was offered on simulation, what area would be of *most* interest to you?
   - ○ 1 Debriefing students after a scenario
   - ○ 2 Evaluating students (grading simulation)
   - ○ 3 Developing simulation scenarios
   - ○ 4 Learning how to properly utilize the technology

7. If a faculty development course was offered on simulation, what area would be of *least* interest to you?
   - ○ 1 Debriefing students after a scenario
   - ○ 2 Evaluating students (grading simulation)
   - ○ 3 Developing simulation scenarios
   - ○ 4 Learning how to properly utilize the technology

8. What other supports do you suggest for instructors teaching with simulation: _____

(for office use only)

ID Number: _ _ _ _ _ _ _ _ _ _ (for internal use only) Date: _ _ / _ _ / _ _ (for internal use only) Study ID: 2 6 8

9. Students should be graded *individually* on a simulation scenario before graduating from nursing school.	10. Students should be graded as a *group* on a simulation scenario before graduating from nursing school.	11. Nursing instructors should have a course developed to assist them in evaluating student outcomes in simulation.
○ 1 Disagree ○ 2 Somewhat disagree ○ 3 Somewhat agree ○ 4 Agree	○ 1 Disagree ○ 2 Somewhat disagree ○ 3 Somewhat agree ○ 4 Agree	○ 1 Disagree ○ 2 Somewhat disagree ○ 3 Somewhat agree ○ 4 Agree

PART A: The following questions are based on the full 8-hour day of simulations

	Disagree 1	Somewhat disagree 2	Somewhat agree 3	Agree 4
1. The knowledge gained from the students' experiences through the simulations can be transferred to the clinical setting.	○	○	○	○
2. Faculty support a safe learning environment that advocates active learning.	○	○	○	○
3. Faculty clearly communicate the objectives and expected outcomes to the participants of the simulation scenarios.	○	○	○	○
4. The full 8-hour day performing simulation scenarios promote better learning outcomes for students than an entire 8 hours of clinical.	○	○	○	○
5. Faculty provides constructive feedback and discussion after the simulation scenerios.	○	○	○	○

PART B: The following questions are based on the individual simulation scenario conducted

	Disagree 1	Somewhat disagree 2	Somewhat agree 3	Agree 4
1. Students were prepared to provide specific rationales for their actions during the simulation scenario.	○	○	○	○
2. Students demonstrated their ability to communicate with other providers of the healthcare team.	○	○	○	○
3. The students demonstrated their ability to obtain pertinent subjective and objective data and report findings to the instructor.	○	○	○	○
4. The instructor modeled professional integrity during the individual scenario.	○	○	○	○
5. The students demonstrated their critical thinking skills learned through the nursing program during the simulation.	○	○	○	○
6. The faculty member was able to assess the students' acquisition of knowledge and skills during the individual scenario.	○	○	○	○
7. The students approached the simulation experience as a serious evaluation of their abilities.	○	○	○	○

APPENDIX C

FACULTY SCRIPT

My name is Susan Kelly, and the purpose of this research study is to determine effective methods of evaluating students using simulation. Participation in this survey is completely voluntary, and you are under no obligation to complete or finish the survey.

I am surveying nursing faculty at the University of Pittsburgh who are teaching in Advanced Clinical Problems Solving for the spring 2014 semester.

If you are willing to participate, the survey will ask questions regarding your experiences at the Winter Institute of Simulation Education and Research (WISER). The questions focus on student learning, objectives, and faculty knowledge in simulation. The survey should take no more than 10 minutes to complete and is not linked to performance in the course.

All responses will be kept completely confidential, and results are kept in a secure data collection area.

I thank you in advance for your cooperation in this survey, and, if you have any question, you may contact me via email at kellys@pitt.edu.

APPENDIX D

STUDENT SCRIPT

My name is Susan Kelly, and the purpose of this research study is to determine effective methods of evaluating students using simulation. Participation in this survey is completely voluntary, and you are under no obligation to complete or finish the survey.

The following questions are based on the simulation experience in the course Advanced Clinical Problem Solving (NUR1121/1221) and the experiences at the simulation center. This survey is not part of the grade for the course and will be used only as information to assist us in improving the simulation experience.

Please read each question carefully and answer to the best of your ability. The survey should take no more than 10 minutes to complete.

All responses will be kept completely confidential, and results are kept in a secure data collection area.

We thank you in advance for your cooperation in this survey, and, if you have any question, you may contact me via email at kellys@pitt.edu.

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