

THE IMPACT OF SIMULATION EXPERIENCES ON NURSING STUDENT'S
SATISFACTION AND SELF-CONFIDENCE IN LEARNING

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Shelly Rae Graening

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The Impact of Simulation Experiences on Student's Satisfaction and
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By

Shelly Rae Graening

The Supervisory Committee certifies that this *disquisition* complies
with North Dakota State University's regulations and meets the
accepted standards for the degree of

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SUPERVISORY COMMITTEE:

Dr. Norma Kiser-Larson

Co-Chair

Dr. Loretta Heuer

Co-Chair

Karla Haug, MS, RN

Margaret Mackowick, MS, RN

Dr. Edward Deckard

Approved:

5/10/2013

Date

Dr. Carla Gross

Department Chair

ABSTRACT

Previous research has shown that high fidelity simulation experiences impact the satisfaction and self-confidence of nursing students. The purpose of the study was to examine the student satisfaction and self-confidence in learning of students in the pre-licensure baccalaureate nursing track and the associate to Bachelor of Science in Nursing (BSN) track at North Dakota State University. The data was obtained from two different courses in two different semesters of study. The surveys used in the descriptive, comparative study included a tool to collect demographic data and the Student Satisfaction and Self-Confidence in Learning Tool. The data revealed that nursing students were satisfied and self-confident in their learning during simulation experiences. The results will assist nurse educators to recognize the importance of providing nursing students opportunities to care for complex, high-risk patients in a low-stakes setting. Nurse educators can then assist in bridging the gap between classroom and clinical practice.

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CHAPTER ONE. INTRODUCTION

Background

Nursing programs across the country are struggling with declining faculty numbers, competing for clinical sites, and the demand to produce competent graduate nurses. Nurse educators are also faced with the challenge of teaching the essential critical thinking skills and behaviors demanded of a constantly evolving and complex health care system. Simulation provides nurse educators an avenue of exposing students to complex clinical problems. Simulation can assist nurse educators in developing graduate nurses with the ability to provide safe, effective, and competent patient care.

Simulation in nursing education is used in various forms of fidelity. Simulation is used by nurse educators through case study scenarios and skills laboratory experiences but most recently the emergence of human patient simulators (HPS) has become a mainstay. The budding utilization of HPS is a response to the need of nurse educators to provide an environment for nursing students to safely practice their newly acquired skills and knowledge. In today's era of healthcare focused on evidence-based practice, patient safety indicators and accountable care organizations, it has become essential for nurse educators to find opportunities to prepare students to deliver safe and competent nursing care.

Research has shown that simulation can enhance student learning and self-confidence--two key components in developing critical thinking skills (Blum, Borglund, & Parcels, 2010; Jeffries et al, 2007; Lasater, 2007b). Lapkin (2010) theorized that learner satisfaction is potentially enhanced when students are engaged in the learning process. Many nurse educators believe the enhancement of student learning is revealed most

evidently during debriefing or reflection phase of the simulation experience (Banning, 2008; Bartels, 1998; Cantrell, 2008; Heath, 1998; Jeffries et al., 2007; Johns, 1995; Nielsen, Stragnell, & Jester, 2007; Parker & Myrick, 2010; Tanner, 2006).

Feingold, Calaluca, and Kallen (2004) indicated that simulation experiences are progressively being used to provide instruction on technical skills and critical thinking to nursing students. Nursing programs across the country are struggling with declining faculty numbers and increasing demands to produce competent graduate nurses. Simulation, through the use of HPS, is one of the ways that nurse educators have begun to incorporate innovative approaches to combat the struggle. Decker suggested that “nurse educators have been challenged to be innovators in the process of educational reform in an effort to promote student learning and acquisition of competence” (Decker, 2007, p. 82). The simulation experience provides nurse educators with the opportunity to meet the challenge of reform. She further explained that research is still needed, not only to validate but, to facilitate best practice in education. (Decker, 2007). Jeffries et al. (2012) emphasized that literature showed increasing evidence of how simulation can be used to promote learning in nursing. Students need opportunities to practice skills, apply theory and engage in critical thinking behaviors needed to practice nursing outside of a controlled environment.

Young (2007) implores nurse educators to offer students the environment to “intentionally and consciously engage with knowledge” (p. 112). Nurse educators also need to generate reflection to shape the students’ forming identities as nurses (Young, 2007). The purpose of this study was to examine the student satisfaction and self-confidence in learning of nursing students in the pre-licensure baccalaureate nursing track and the associate to Bachelor of Science in Nursing (BSN) track and to provide nursing

students the opportunity to reflect on their simulation experiences guided by cue questions based on ways of knowing and enhance their own learning during simulation experiences. Through guided reflection, nursing students can assimilate an awareness of critical thinking and clinical judgment. Nurse educators can provide students the tools to critically reflect upon their learning, assist students in navigating through the complex clinical problems that can occur and build the strong critical thinking skills needed in nursing practice.

One of the challenges of using simulation is the cost, not only of the simulator but of the manpower to run a simulation lab (Jeffries et al., 2012). Nursing programs need to be prepared to undertake the expense as well as consider the faculty training, time to run simulations, and space to house the simulators and additional equipment. If nursing programs undertake simulation, it has infinite potential as a teaching tool in nursing education (Jeffries et al. 2012).

Significance for Nursing

Focus on student-centered learning and the demands to produce practice-ready graduate nurses led nursing programs to critically evaluate current teaching practices. Simulation is one of the various methods used to incorporate the best practice approach of active learning in both clinical and non-clinical courses (Chickering & Gamson, 1987; Jeffries et al., 2012; Smith et al., 2012). Berkow, Virkstis, Stewart and Conway (2008) introduced research focusing on the practice readiness gap among new graduate nurses. The research reflected the differing perceptions of satisfaction with new graduate performance between nurse leaders and nurse educators. Due to current research of the differing perceptions of new graduate competency, the National Council of State Boards of Nursing (NCSBN, 2011) has developed a transition to practice model to provide healthcare

facilities guidance in development of new graduate competency. Research has shown it is beneficial to student learning for nurse educators to provide opportunity to reflect upon key points during simulation experiences (Lasater, 2007a; Leighton & Scholl, 2009; Parker & Myrick, 2010; Tanner, 2007). By using simulation experiences to incorporate various theoretical perspectives, such as Carper's *Fundamental Patterns of Knowing in Nursing* (1978) and Tanner's *Clinical Judgment Model* (2006), nurse educators can incorporate both clinical and theoretical practice to produce graduate nurses who are already integrating the methods required to "think like a nurse" when they enter the workforce (Tanner, 2006, p. 209). Simulation experiences also allow nurse educators to draw on the foundations of nursing practice such as different ways of knowing to clarify the significance of the discipline of nursing to those same graduate nurses (Carper, 1978; Chinn & Kramer, 2007; Jeffries et al., 2012; Johns, 1995).

CHAPTER TWO. REVIEW OF LITERATURE

Simulation

Simulation in nursing education has come to focus most recently on the use of the Human Patient Simulator (HPS). Reflecting on the simulation practices in the aviation industry, the HPS is a full-body mannequin attached to computer hardware and software to reproduce a realistic patient experience. HPS units are typically set up in an area of the skills laboratory to mimic the hospital setting the nursing student would most likely experience. In the nursing literature, the increased use of simulation, typically HPS, is attributed to a variety of reasons, including the nursing shortage, the nurse educator shortage, the need for increased nursing program enrollment, the need to supplement the limited numbers of clinical sites, as well as the ability to enhance clinical practice (Curl, Smith, Chisholm, Hamilton, & McGee, 2007; Jeffries et al., 2012; Kaplan, Abraham, & Gary, 2012; Kardong-Edgren, Starkweather, & Ward, 2008; Parker, & Myrick, 2010; Seropian, Brown, Gavilanes, & Driggers, 2004). HPS experiences provide nursing students the chance to engage in opportunities to enhance clinical judgment and critical thinking in a safe, nonthreatening environment. The simulation environment allows the nursing student to apply theory to practice in a low-stakes setting and for immediate feedback from faculty. Many nurse educators believe that simulation enhances critical thinking through the practice of psychomotor skills and communication (Arnold, Johnson, Tucker, Malec, Henrickson, & Dunn, 2009; Cantrell, 2008; Feingold, Calaluce, & Kallen, 2004; Jeffries et al., 2007; Lasater, 2007b; Leighton & Scholl, 2009).

Critical Thinking

Terms and definitions of critical thinking, problem solving, decision making, clinical reasoning, and clinical judgment vary yet, at times, are used interchangeably in nursing. According to Staib (2003), a well-quoted definition of critical thinking comes from the philosopher Richard Paul: “Critical thinking is the art of thinking about your thinking while you are thinking in order to make your thinking better...” (p. 498). Banning (2008) explored the “thinking about thinking” as she discussed the concept of metacognition when defining clinical reasoning (p. 9). Lasater (2007a) defined clinical judgment as “those thinking and evaluative processes that focus on a nurse’s response to a patient’s ill-structured and multilayered problems” (p. 269). Tanner (2006) developed the *Clinical Judgment Model* that identified four major components involved in clinical judgment. The phases consist of noticing, interpreting, responding, and reflecting (Tanner, 2006, p. 208). Lasater (2007b) summarized the concepts of the Tanner (2006) *Clinical Judgment Model* as the thinking-in-action skills of noticing, interpreting, and responding during the experience and the thinking-on-action skills of reflection after a simulation experience. Tanner (2006) described reflection as a key component in the process of developing clinical judgment.

Reflection

Johns (1995) utilized Carper’s four patterns of knowing to develop cue questions for reflection in nursing practice. Johns (1995) discussed that using Carper’s patterns of knowing as a framework for “structured reflection” provided nurses with validity to their learning experiences (p. 233). Carper (1978) explained that nursing knowledge was based on four fundamental patterns. The patterns identified were (1) empirics, the science of

nursing; (2) esthetics, the art of nursing; (3) personal knowledge; and (4) ethics, the moral knowledge of nursing. Carper believed that understanding these patterns for the teaching and learning of nursing is crucial. Researchers like Johns (1995), Tanner (2006), and Chinn and Kramer (2007) have expanded on Carper's philosophy validating that these patterns are interrelated and although they may be mastered individually, alone they are not sufficient. Simulations that incorporate debriefing allow for nursing students to share their personal knowledge, as well as build their understanding of the art, science, and moral base of the nursing profession.

Dewey introduced the idea of reflecting on experience in the 1930s. Dewey (1938) spoke of the meaning and formation of purpose. He stated that the formation of purposes was complex involving observation of conditions, knowledge of previous experiences, and judgment of what is significant for future experiences. Neilsen et al. (2007) agreed that reflection and self-evaluation of learning entails "thoughtful consideration of an experience" (p. 513). Bartels (1998) explained that it is insufficient to just experience new ideas. The experience in itself does not assure that useful and continual learning has occurred. Bartels (1998) elaborated, "if learning is to be owned by learners, then we must find ways to develop in learners a sense of awareness and responsibility for their intellectual and applied progress" (p. 135). She continued to state that by providing students with the opportunity to assess their own learning, nurse educators can assist in developing critical thinking skills needed in practice (Bartels, 1998). Various authors have suggested that reflection assists students in the ability to what many describe as "think like a nurse" (Banning, 2007; Bartels, 1998; Diekelmann, 2003; Etheridge, 2007; Ironside, 2003; Nielsen et al., 2007; Rutherford-Hemming, 2012; Tanner, 2006).

A variety of methods in reflection can be used and are helpful in evaluating nursing student learning. Brookfield (2006) discussed the use of learning audits. Learning audits provide nursing students with three basic questions to discuss: what they felt they learned, the progress they have made, and the applicability of their learning. Learning audits also may be more effective if nursing students are provided with a nonthreatening learning environment and cue questions to illicit critical reflection.

The *Facilitator's Tool for Guided Reflection Sessions* (Jeffries et al, 2007) was developed based on the concepts of Johns' *Model of Structured Reflection* (1995) for use in the *National League of Nursing/Laerdal Simulation Study*. Johns (1995) developed his model for reflection from Carper's *Fundamental Patterns of Knowing in Nursing* (1978). Jeffries' tool provides the facilitator the opportunity to provoke thought and thus allow students to draw out meaningful reflection (2007).

Debriefing

Guided reflection sessions or debriefing are discussions following a group activity that allows nursing students the time to discuss what they have learned during the activity. Guidance in reflection assists students in development of their clinical reasoning (Tanner, 2006). Debriefing provides for the opportunity to process what has been learned and ensures that all tasks are completed. According to Cantrell (2008), debriefing facilitated growth of the nursing student's therapeutic communication skills, addressed emotions and verified feelings as vital to learning progression. Cantrell (2008) expanded on the idea by stating that reflection and feedback are necessary factors for professional development and are connected to professional nurse competencies. Cantrell's research (2008) explained the timing of debriefing was essential to the nursing student's perceptions. The nursing

students believed that debriefing was preferable immediately following the simulation experience as it was fresh in their minds and they were still engaged (Cantrell, 2008, p. e21). The study reinforced the need to be aware of nursing student satisfaction in the teaching-learning experience.

For simulation experiences to be considered beneficial in the eye of the learner, nursing students need to be provided with the tools to complete a reflection that provides meaning to their behaviors during the experience. Idczak (2007) suggested the concept of “relatedness backward”. She stated that nurses may not grasp the importance of the interactions they have with their patients until they look back and reflect on the interaction (Idczak, 2007). The process of reflection needs to go beyond what is being done to the reason the action was done. Guiding reflection in the debriefing phase of simulation experiences can provide a way for nurse educators to lead nursing students to go beyond thinking about the skills they performed to the reasoning for making certain choices, in other words, to critically think about their actions. Simulation experiences provide the ideal arena for nurse educators to enlist the practice of critical thinking in a nonthreatening learning environment that allows for immediate feedback (Jeffries et al, 2007; Sharpnack & Madigan, 2012; Tanner, 2006).

Theoretical Framework

The theoretical framework for this research was based on the *Nursing Education Simulation Framework* (Figure 1). The *National League for Nursing* (NLN) describes the need for a framework that is a “consistent and empirically supported model to guide the design and implementation and evaluation of simulations” (Jeffries et al., 2007, p. 22). The framework was developed based on literature related to simulation in nursing, health care

and non-health care disciplines. The *Nursing Education Simulation Framework* was developed for and initially tested through the *NLN/Laerdal Simulation Study* (Jeffries et al., 2007). The concepts of teacher factors, student factors, educational practices, simulation design characteristics, and expected nursing student outcomes were included in the design of the framework (Jeffries et al., 2007). Since the development of the framework, the now-named *NLN/Jeffries Simulation Framework* (Jeffries et al., 2012) has undergone minor modifications to correlate with current simulation terms. Teacher is now facilitator, student is now participant but the other concepts remain the same (Jeffries et al., 2012).

There were two foci for the current study. One focus was the addition of debriefing to the current design during mock code simulations. The second focus was the nursing student factors that influence performance, particularly, learner satisfaction and self-confidence during the simulation experience. Debriefing engages nursing students and the nurse educator in discussing what happened and what was learned. Debriefing should occur immediately following the simulation experience (Jeffries et al., 2012; Tanner, 2006). The timing of the debriefing is important so thoughts and feelings related to the experience are not forgotten or become impossible to differentiate. Learning outcomes, such as the student's satisfaction and self-confidence, are significant in evaluating success of the simulation experiences.

Simulations are nursing student-centered but the nurse educator plays a key role as facilitator and evaluator. As a facilitator, the nurse educator guides the simulation experience by asking questions, proposing "what ifs" as well as providing support and encouragement (Jeffries et al., 2012, p. 28; Tanner, 2006). The framework is based on the belief that the nurse educator's role, experience, comfort, and overall use of simulations is

associated with the demographics such as years of experience, age of the nurse educator and clinical expertise (Jeffries et al., 2012).

The concept of student/participant is based on the belief that during simulation experiences, nursing students are expected to be self-directed and motivated, responsible for their own learning (Jeffries et al., 2012). For nursing students to undertake the responsibility, they need to be apprised of the “ground rules” of the process (Jeffries et al., 2007, p. 24). These rules should encourage and support learning, minimize competition, and specify the variety of roles nursing students will play during simulation. The concept of student also takes into account the variables that can affect a nursing student’s simulation experience, such as age and experience in the health care setting.

The concept of educational practices is tied in with the nurse educator and the nursing student. Educational practice encompasses active learning, diverse learning styles, collaboration, and high expectations. The educational practice components are needed to build simulations designed to improve nursing student performance and satisfaction with their learning (Chickering & Gamson, 1987; Jeffries et al. 2012; Rutherford-Hemming, 2012). Active learning is comprised of the engagement that enhances nursing students’ critical thinking skills (Billings & Halstead, 2012). Although, feedback is an example of active learning, care needs to be taken that it does not interfere with the learning process. Simulations are the optimal medium to meet the needs of all learning styles. Facets of visual, auditory, tactile and kinesthetic learning were incorporated in the *NLN/Laerdal Simulation Study* (Jeffries et al., 2012). Collaboration is related to the relationship between nursing student and nurse educator. Learning is enhanced if the atmosphere of the simulation is one of mutual respect and the learner feels comfortable asking questions

(Billings & Halstead, 2012; Rutherford-Hemming, 2012; Sharpnack & Madigan, 2012; Tanner, 2006). Constructive feedback from both nursing student and nurse educator is needed to refine the simulation experience. High expectations are an important component of educational practice. When nursing students are expected to do well and given a safe environment to practice, they will feel empowered to expand their knowledge (Henneman & Cunningham, 2005; Tanner, 2006).

Simulation design characteristics encompass objectives, fidelity, problem solving, student support and debriefing. Objectives provide directions that reflect the intended outcome, expected behaviors, and details to participate successfully (Reilly & Oermann, 1990). Fidelity is the degree simulations mimic reality. Problem solving is related to the level of complexity of the simulation (Jeffries et al., 2012). The level needs to be obtainable for effective learning to take place. Student support is comprised of information, in the form of cues, that allows the learner to progress through the simulation but does not interfere with problem solving. Debriefing is the period when the nursing students and nurse educator examine what happened and what was learned. Debriefing time allows for clarification of any misperceptions, correction of errors and emphasis on safe nursing care and decision making (Jeffries et al., 2012; Sharpnack & Madigan, 2012).

The final concept of outcomes entails knowledge gained, skills performed, learners' satisfaction, critical thinking and self-confidence. For the simulation to be considered beneficial and measureable, learning outcomes need to be established and reviewed prior to the experience. Evaluation of outcomes is needed to determine student's learning and effectiveness of the simulation (Kirkpatrick, DeWitt-Weaver & Yeager, 2005).

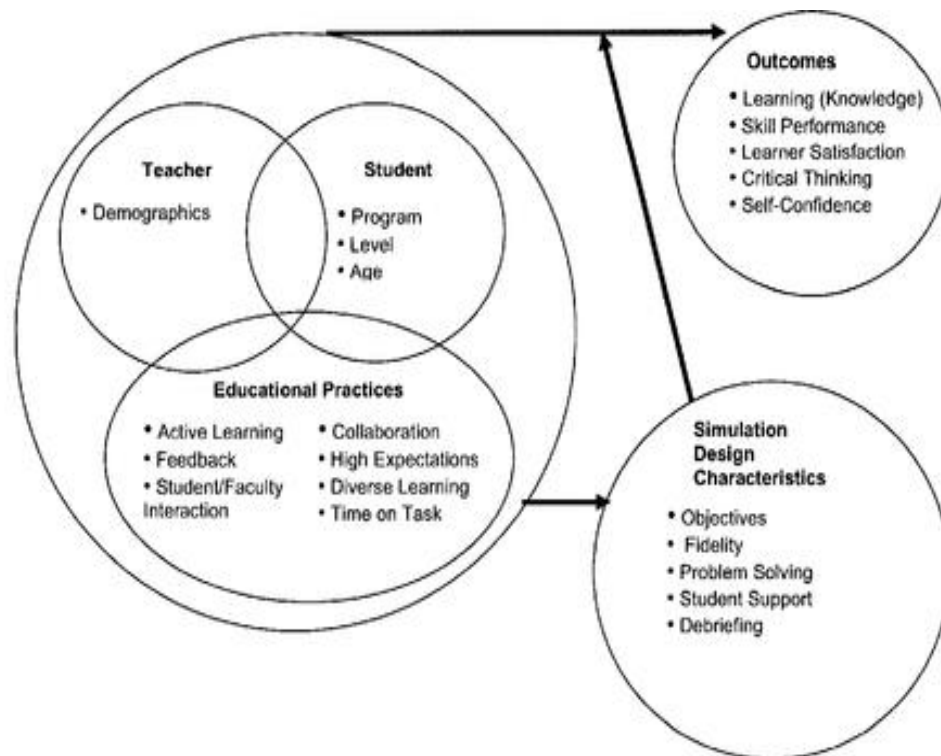


Figure 1. The Nursing Simulation Education Framework. In P. Jeffries (Ed.). (2007) *Simulation in nursing education: From conceptualization to evaluation*. New York: National League for Nursing. Reprinted with permission (Appendix A).

Research Questions

As discussed in the review of literature, many concepts can influence nursing students' performance and perceptions during simulation experiences. This research utilized the *Facilitator's Tool for Guided Reflection Sessions* (Jeffries et al., 2007) based on the concepts of Johns' *Model of Structured Reflection* (1995). Johns (1995) developed his model for reflection from Carper's *Fundamental Patterns of Knowing in Nursing*

(1978). The cue questions can be used by the facilitator to provoke thought in each of the four ways of knowing described by Carper and thus allow nursing students to bring forth meaningful reflection. The research study examined the following questions:

1. Did the use of debriefing during simulation experiences impact the nursing students' satisfaction in learning?
2. Did the use of simulation and reflection provide nursing students with increased confidence for future practice?

Conceptual and Operational Definitions

The conceptual and operational definitions provide an understanding of the terms used in the current study. The *National League of Nursing* (NLN) has provided solid definitions of simulation terminology; therefore, the following definitions are drawn from the simulation research.

Simulation

The conceptual definition of simulation is to imitate something real. The *National League for Nursing* (NLN) describes simulation as an attempt to mimic essential aspects of a clinical situation with the goal of understanding and managing the situation better when it occurs in actual clinical practice (NLN, 2007). Simulation is a technique that uses a situation or environment created to allow persons to experience a representation of a real event for the purpose of practice, learning, evaluation, testing, or to gain understanding of systems or human actions. The operational definition of simulation is the use of human patient simulators (HPS) during a case scenario experience developed and guided by experienced faculty with the presence of the elements of a clinical situation that resemble real experiences (Arnold et al, 2011).

Reflection

The conceptual definition of reflection is the process of careful thought. The operational definition of reflection for the purpose of the current study consists of thoughts and discussion relating to a student's experience during simulation. The practice of reflection can take place during the simulation experience or during the debriefing directly after the simulation experience.

Guided Reflection

The conceptual definition of guided reflection is defined as the process encouraged by the instructor during debriefing that reinforces the critical aspects of the experience and encourages insightful learning allowing the participant to link theory with practice and research (NLN, 2007). The operational definition of guided reflection is the use of the *Facilitator's Tool for Guided Reflection Sessions* (Jeffries et al., 2007) to elicit the student's insight on the simulation experience.

Debriefing

The conceptual definition of debriefing is an activity that follows a simulation experience led by a facilitator wherein feedback is provided on the simulation participants' performance while positive aspects of the completed simulation are discussed and reflective thinking encouraged (NLN, 2007). The operational definition of debriefing is the use of open-ended questions by the facilitator to engage the simulation participants in sharing thoughts and feelings regarding the simulation experience.

Fidelity

The conceptual definition of fidelity is the degree that a condition or event corresponds with fact. According to the NLN, fidelity is the degree to which the simulation

encounter or the simulation equipment approaches reality (NLN, 2007). Seropian et al. (2004) classified three levels of fidelity used in simulation as (a) low-fidelity, (b) moderate-fidelity, or (c) high-fidelity. The operational definition of fidelity for this research is described as the use of a human patient simulator to provide students with a simulated code scenario.

Assumptions

Assumptions were as follows:

1. Simulation using human patient simulators (HPS) provides an innovative strategy to teaching and evaluating clinical judgment.
2. Reflection assists the nursing student in the application of ways of knowing and, therefore, clinical judgment.
3. The combination of simulation and reflection enhances satisfaction and self-confidence in learning.
4. Simulation and reflection assist students in developing ways of knowing and improving clinical reasoning in complex situations.

CHAPTER THREE. METHODOLOGY

Design and Sample

The descriptive, comparative study was conducted at North Dakota State University. Students were accepted and enrolled in a baccalaureate nursing program with the Nursing Department in the College of Pharmacy, Nursing, and Allied Sciences. A convenience sample of nursing students from two tracks comprised the population. Students from the pre-licensure baccalaureate nursing track participated in the simulation experience during the spring semester. Students from the associate to Bachelor of Science in Nursing (BSN) track participated in the simulation experience during the summer semester.

Nursing students participated in a mock code simulation experience while enrolled in an Adult Health Nursing course. Nursing students participating in the simulation experience were divided in groups of three to four. Students were provided access to a sign up for self-selected times independently. Prior to arrival for the simulation experience, nursing students were provided with and required to review *Part 8: Adult Advanced Cardiovascular Life Support: 2010 American Heart Association Guidelines for Cardiopulmonary Resuscitation and Emergency Cardiovascular Care* (Neumar et al, 2010). The simulation experience started with discussion regarding the required reading. The discussion was guided by the nurse educator. Nursing students were verbally quizzed on their knowledge of the reading. The nursing students were allowed opportunity to ask questions regarding the article. Once the nurse educator and nursing students were ready to proceed, a patient care scenario was provided. Each nursing student was randomly assigned a role. The roles consisted of patient care/compressions nurse, charge nurse/recorder,

medication/defibrillator nurse and airway nurse. These roles were rotated during the code simulation so that all were allowed opportunity to practice each role. The *Facilitator's Tool for Guided Reflection Sessions* (Jeffries et al., 2007) (Appendix B) was used by the nurse educator to provide cues for reflection. During the simulation activity, the nurse educator directed discussion with the nursing students using the cues for reflection.

The setting of the research was the simulation laboratory housing the Human Patient Simulator (HPS) from CAE Healthcare in the Nursing Department of North Dakota State University. The HPS is housed in an exam room with an adjacent viewing room. According to the CAE Healthcare HPS brochure (2011), the HPS includes an adult mannequin, control rack, instructor's workstation computer, waveform display monitor, as well as licensed software and preprogrammed simulated clinical experiences. The adult mannequin is a full-size reproduction of an adult male. It is fully operational in supine, sitting, lateral, and prone positions. It offers the features of heart, lung, and bowel sounds, as well as, blinking reactive eyes, palpable pulses, chest excursion and airway patency. The waveform display monitor allows for noninvasive and invasive hemodynamic monitoring during the simulation experience. The simulation can be model-driven and/or manually controlled by the instructor.

Permission to conduct the research was obtained from the Institutional Review Board at North Dakota State University (Appendix C). Verbal approval was obtained from the course coordinator. Nursing students were provided written information regarding the purpose of the study and informed that participation was voluntary and confidential (Appendix D). Permission for use and acquisition of the *Student Satisfaction and Self-*

Confidence in Learning instrument was obtained from the National League for Nursing Research Division (Appendix E).

Data Collection

Immediately after the simulation experience, simulation participants completed the *Student Satisfaction and Self-Confidence in Learning* questionnaire (Jeffries et al., 2007) (Appendix F) as well as a tool to collect demographic data (Appendix G). The *Student Satisfaction and Self-Confidence in Learning* questionnaire was designed for use in the *NLN/Laerdal Simulation Study*. It is a 13-item questionnaire comprised of a 5-item instrument to measure student satisfaction and an 8-item instrument measuring self-confidence in learning (Jeffries et al., 2007). The *Student Satisfaction with Learning Scale* uses five different items to measure student satisfaction related to the simulation experience. The *Self-Confidence in Learning Using Simulation Scale* uses eight items to measure the confidence students felt about their knowledge and skills in caring for the simulation patient. Both scales used a 5-point Likert scale. A mark of 1 equals strongly disagree, 2 equals disagree, 3 equals undecided, 4 equals agree and 5 equals strongly agree with the items. Nine clinical nursing experts established content validity. Reliability was tested using Cronbach's alpha: satisfaction = 0.94; self-confidence = 0.87 (Jeffries et al., 2007). The *NLN/Laerdal Simulation Study* concluded that nursing students participating in HPS simulation experiences were more satisfied and perceived higher levels of confidence than with other methods of instruction. The demographic data collection tool was comprised of five questions. The demographic data collected included age, sex, prior health care experience, role in the current simulation experience, and prior simulation experience.

Data Analysis Plan

Surveys were provided to all simulation participants in two separate semesters. The spring semester simulation participants were students enrolled in the pre-licensure baccalaureate nursing track. Students in the associate to BSN track comprised the summer semester simulation participants. Demographic information and results of the *Student Satisfaction and Self-Confidence in Learning* questionnaire were sorted and compiled as groups. Frequency distribution, relative frequency distribution, means and *t*-test procedures were completed using the survey data and demographic information with assistance from the statistical consulting department of the university.

CHAPTER FOUR. RESULTS

Demographic information and results of the *Student Satisfaction and Self-Confidence in Learning* questionnaire were sorted and compiled as groups. The data from the pre-licensure baccalaureate nursing track and associate to BSN track were compared specifically looking at age, healthcare experience, overall satisfaction and overall self-confidence.

Demographic Data

The total number of students who completed the survey was 51. All parts of the survey were completed by all of the participants. The students from the pre-licensure track who participated totaled 28. The number of students from the associate to BSN track who participated was 23.

The majority of students that participated were female. The sample included a total of six males and 45 females. The pre-licensure track consisted of four males and 24 females. The associate to BSN track was comprised of two males and 21 females. The distribution of gender is shown in Table 1.

Table 1

Gender Distribution of Participants

Track	Gender	Number	Percentage (%)
Pre-licensure	Male	4	14.3
	Female	24	85.7
Associate to BSN	Male	2	8.7
	Female	21	91.3
Overall	Male	6	11.8
	Female	45	88.2

Overall, the majority of students who participated in the survey were between the ages of 22-25. The largest number of students from the pre-licensure track fell between the ages of 22-25. The majority of students from the associate to BSN track were between the ages of 26-30. There were no students over the age of 30 in the pre-licensure track. There were no students that fell between the ages of 18-21 in the associate to BSN track. The smallest overall percentage of students fell into the age range of 18-21. The ages of students are shown in Table 2.

Table 2

Age Distribution of Participants

Track	Age range	Number	Percentage (%)
Pre-licensure	18-21	4	14.3
	22-25	22	78.6
	26-30	2	7.1
	30+	0	0.0
Associate to BSN	18-21	0	0.0
	22-25	6	26.1
	26-30	9	39.1
	30+	8	34.8
Overall	18-21	4	7.8
	22-25	28	54.9
	26-30	11	21.6
	30+	8	15.7

The majority of students who participated in the survey reported they had two-plus years of healthcare experience. This majority was consistent through both the pre-licensure baccalaureate nursing and associate to BSN tracks. There were a total of six nursing

students from both tracks that rated in the *no healthcare experience* range. Table 3 illustrates the healthcare experience of each group.

Table 3

Years of Healthcare Experience of Participants

Track	Years of experience	Number	Percentage (%)
Pre-licensure	None	5	17.9
	Less than 1	5	17.9
	1-2	5	17.9
	Greater than 2	13	46.4
Associate to BSN	None	1	4.4
	Less than 1	0	0.0
	1-2	2	8.7
	Greater than 2	20	86.9
Overall	None	6	11.8
	Less than 1	5	9.8
	1-2	7	13.7
	Greater than 2	33	64.7

Research Questions

Students were asked to respond to questions regarding satisfaction and self-confidence in learning immediately after participating in the simulation experience. The students' responses were computed based on overall satisfaction and overall self-confidence. The *t*-test was used to analyze the mean data of overall satisfaction and overall self-confidence between the two tracks. Significance level was set at a *p* value of < 0.05.

The scores for overall satisfaction could range from a minimum of five to a maximum of 25. Overall, 33 of the participants had satisfaction scores of 25; 20 students

(n=28; 71%) were in the pre-licensure track and 13 were in the associate to BSN track. The scores for overall satisfaction for the pre-licensure track participants ranged from 21 to 25 with a mean of 24.4.

For the associate to BSN track, the reported scores for overall satisfaction fell between 20 and 25 with a mean of 24.1. The overall satisfaction scores are represented in Table 4. The *t*-test results did not indicate a significant difference between the satisfaction measures for the two tracks (Table 5 and 6).

Table 4

Satisfaction Scores of Participants

Track	Satisfaction Score	Number	Percentage (%)
Pre-licensure	20	0	0.0
	21	2	7.1
	22	0	0.0
	23	3	10.7
	24	3	10.7
	25	20	71.5
Associate to BSN	20	1	4.3
	21	0	0.0
	22	1	4.3
	23	4	17.4
	24	4	17.4
	25	13	56.6
Overall	20	1	2.0
	21	2	3.9
	22	1	2.0
	23	7	13.7
	24	7	13.7
	25	33	64.7

Table 5

Overall Satisfaction Scores between Participants

Track	N	Mean	SD
Pre-licensure	28	24.4	1.17
Associate to BSN	23	24.1	1.29
Difference		0.3	1.22

SD, standard deviation

Table 6

T-test Comparison of Overall Satisfaction

Method	Variances	<i>t</i> value	Pr > <i>t</i>	<i>p</i> value
Pooled	Equal	0.76	0.45	<0.05
Satterthwaite	Unequal	0.75	0.45	<0.05

The scores for overall self-confidence could range from a minimum of eight to a maximum of 40. Overall, 10 of the participants had self-confidence scores of 39; six students were in the pre-licensure baccalaureate nursing track and four were in the associate to BSN track. In the pre-licensure track, the scores for overall self-confidence ranged from 28 to 40 with a mean of 37. The reported scores for overall self-confidence for the associate to BSN track participants fell between 30 and 40 with a mean of 37.1. The overall self-confidence scores are shown in Table 7. Results of the *t*-test indicated that the self-confidence measure did not vary significantly between the two tracks (Table 8 and 9).

Table 7

Self-Confidence Scores of Participants

Track	Self-Confidence Scores	Number	Percentage
Pre-licensure	28	1	3.6
	30	0	0.0
	31	1	3.6
	33	1	3.6
	34	1	3.6
	35	1	3.6
	36	5	17.9
	37	3	10.7
	38	5	17.9
	39	6	21.4
	40	4	14.3
Associate to BSN	28	0	0.0
	30	1	4.3
	31	0	0.0
	33	0	0.0
	34	1	4.3
	35	4	17.4
	36	2	8.7
	37	4	17.4
	38	3	13.0
	39	4	17.4
	40	4	17.4
Overall	28	1	2.0
	30	1	2.0
	31	1	2.0
	33	1	2.0
	34	2	3.9
	35	5	9.8
	36	7	13.7
	37	7	13.7
	38	8	15.7
	39	10	19.6
40	8	15.7	

Table 8

Overall Self-Confidence Scores between Participants

Track	N	Mean	SD
Pre-licensure	28	37	2.83
Associate to BSN	23	37.1	2.44
Difference		-0.1	2.66

SD, standard deviation

Table 9

T-test Comparison of Overall Self-Confidence

Method	Variances	<i>t</i> value	Pr > <i>t</i>	<i>p</i> value
Pooled	Equal	-0.17	0.86	<0.05
Satterthwaite	Unequal	-0.18	0.86	<0.05

The results of the study revealed that students overall were satisfied with their learning during simulation experiences. The scores indicated that a majority of students were confident with their knowledge and skill in caring for a simulated patient. While there was not a significant difference in scores between the two tracks, it is important to point out that the spring semester students were pre-licensure and the summer semester students were licensed as either a licensed practical nurse or registered nurse.

CHAPTER FIVE. DISCUSSION AND CONCLUSION

The study was conducted to evaluate the perceptions of nursing students overall satisfaction and self-confidence in simulation experiences. Two distinct groups, pre-licensure track and associate to BSN track students were evaluated. The results may aid nurse educators in recognizing the need to provide nursing students with learning activities that assist in the transition to become competent nurses in practice.

Interpretation of Results

The simulations and surveys were conducted approximately three-fourths through the semesters. They were conducted in two separate semesters: spring and summer. The surveys were administered to senior pre-licensure baccalaureate track students in the spring semester and associate to BSN track students in the summer semester.

The timing of the surveys may have influenced the students' satisfaction and self-confidence. The students in the spring semester were nearing the end of the semester and graduation which can be both stressful and exhilarating. The summer semester students were at varying levels in degree progression and were attempting to complete a five credit class with a clinical component within a 10-week period during the summer.

While not found to be statistically significant, students in the spring semester had higher overall satisfaction scores. Again, students in the spring semester were pre-licensure baccalaureate nursing track with a higher percentage of students falling in the age range of 22-25. Students in the 22-25 age range have grown up with advancing technology so are typically more comfortable in the simulation setting (Oblinger, 2003).

Simulations provide students with an environment to practice problem solving and critical thinking skills without fear of harming a patient. The results of the survey indicated

that students from both semesters were confident with their skills and knowledge of caring for the simulated patient yet there was no significant difference between the semesters. The students in the summer semester were licensed nurses, either licensed practical nurses or registered nurses, already in practice. The students in the spring semester were pre-licensure and had yet to practice as full-fledged nurses. The lack of a significant difference in satisfaction and self-confidence between pre-licensure and licensed nursing students may present a concern for nurse educators. Current research shows that 90% of academic leaders believe that their students are fully prepared to safely provide care, whereas, only 10 % of nurse executives believe that students are fully prepared to safely provide care (Berkow et al., 2008). Understanding of student learning during simulation experiences may provide a bridge to close the gap between classroom and clinical practice. Berkow et al. (2008) reported that less than 50% of nurse leaders were satisfied with new graduate nurse performance in patient assessment, medication administration, ability to work as part of a team, as well as clinical knowledge of patient conditions and understanding of medications. Knowledge of new graduate performance areas of concern provide nurse educators with a starting point for change in educational practices.

Limitations

There were several limitations identified in this study.

1. Due to the small sample size, the satisfaction and self-confidence expressed by the sample group of nursing students may not be representative of the characteristics of the larger population.
2. Data was collected with only one simulation experience per semester among two different groups of nursing students. Comparison of subsequent simulation

experiences with the same group could have indicated students' perceptions may change with increased simulation experience.

3. The data collection was limited to a simple survey related to student satisfaction and self-confidence in learning. Richer data related to critical thinking could be captured by utilizing pre- and post-simulation knowledge exams.
4. Data analysis focused on overall satisfaction and self-confidence in learning. Beneficial information could be obtained by looking at individual answers of the survey through written explanations or focus groups.
5. The nursing students' comfort and perceptions of simulated experiences may have had an impact on how the nursing students answered the survey questions. For nursing students in the pre-licensure baccalaureate nursing track, the survey was administered on the third and final simulation. Thus, it was assumed they were comfortable with the human patient simulator (HPS). For nursing students in the associate to BSN track, it was unknown if the reported prior simulation experiences were with a HPS. Consequently, they may not have been as comfortable with the HPS. Level of simulation experience may influence how the nursing students rated their satisfaction and self-confidence.

Implications for Nursing Education

Current research has shown a gap between the perceptions of academic nurse leaders and nurse executives in the health care system regarding newly graduated nurse readiness for practice (Berkow et al., 2008). Understanding of student learning during simulation experiences may provide a bridge to close the gap between classroom and clinical practice. Berkow et al. (2008) reported that less than 50% of nurse leaders were

satisfied with new graduate nurse performance in patient assessment, medication administration, ability to work as part of a team, as well as clinical knowledge of patient conditions and understanding of medications. Less than 25% of nurse leaders were satisfied with the new graduate's ability to recognize changes in a patient's status (Berkow et al., 2008).

Simulation experiences are an excellent method to provide nursing students the opportunity to put into practice their newly acquired skills and knowledge without the fear of harming a live patient. Simulation experiences provide nurse educators with an avenue to assess that nursing students have the knowledge and skills to care for the complexity of patients they will care for in their practice (Blum et al., 2010; Ignacio, 2012; Jeffries et al., 2007; Parker & Myrick, 2010; Tanner, 2006). Simulation experiences provide an ideal opportunity for nursing students to care for complex, high-risk patients they may not encounter during their clinical rotations. Simulation also allows nursing students to think through situations that may be uncomfortable or considered sensitive or controversial with guidance from experienced clinicians (Jeffries et al., 2007; Parker & Myrick, 2010; Tanner, 2006).

Recommendations for Further Research

The sample size of the study limited the opportunity to truly generalize nursing students' satisfaction and self-confidence in learning during high-fidelity simulation experiences. A larger sample would have provided broadening statistical relevance and comparison in the data. Enlarging the sample size could be beneficial for further research of the differences between the two study groups. Further research could also include a longitudinal study examining the nursing student's satisfaction and self-confidence in

learning with each simulation experience throughout the nursing school curriculum.

Continued research surrounding simulation would allow for greater comparison of the true impact of these types of learning experiences.

The use of focus groups or examination of nursing student's reflections in writing could be used to provide explanation to the answers nursing students provided on the questionnaire. The result would provide for more robust data by examining the individual items in the data collection tools which could provide explanation regarding the student's answers. Comparative data could be compiled to extract which items students found most important. Looking at the individual items regarding satisfaction, self-confidence and demographic data by allowing for narrative answering of the questions would provide more specificity of understanding the students' answers.

As the understanding of simulation in nursing education grows, the opportunities to expand simulation experiences grow as well. Current research has examined using simulation for enhancing patient safety, code simulations, and end-of-life simulations (Jeffries et al., 2012; Moreland et al., 2012; Walsh & Wolf, 2012). Looking at alternate endings for the current simulation design would allow faculty to cover scenarios such as end-of-life that students may not be exposed to until they are in practice.

Conclusion

As simulation emerges as a mainstay in nursing education, more research needs to be conducted to provide for a basis of teaching and learning practice. The demand to provide competent new graduate nurses is important with the increasing complexity of the health care system. Research of patient care simulation and graduate nurse readiness can assist nurse educators in easing the transition from classroom to practice.

Simulation experiences are used in nursing programs to provide a form of experiential learning, bridging the gap between clinical and non-clinical practice (Ignacio, 2012). Simulation scenarios are used to reinforce and evaluate classroom and clinical learning. With pressure to provide competent graduate nurses and mandates for increased simulation experiences from the American Association of Colleges of Nursing Baccalaureate Essentials (AACN, 2008), nurse educators are tasked with finding new ways to incorporate simulation into their curriculum. There is need for evaluation for the effectiveness of simulation in improving learning outcomes and performance in bedside practice (Kaplan, Abraham, & Gary, 2012; Rutherford-Hemming, 2012).

In conclusion, the study examined the impact that simulation experiences had on the satisfaction and self-confidence in learning among students in the baccalaureate nursing programs at North Dakota State University. The results demonstrated that overall nursing students were satisfied and self-confident with their learning in simulation experiences. The results did not show significant differences in satisfaction and self-confidence between pre-licensure baccalaureate nursing track students and those students in the associate to BSN track.

REFERENCES

- American Association of Colleges of Nursing. (2008). *Essentials of Baccalaureate Education for Professional Nursing Practice*. Retrieved from <http://www.aacn.nche.edu/education-resources/BaccEssentials08.pdf> .
- Arnold, J., Johnson, L., Tucker, S., Malec, J., Hendrickson, S. & Dunn, W. (2009). Evaluation tools in simulation learning: Performance and self-efficacy in emergency response. *Clinical Simulation in Nursing*, 5(1), e35-e43.
- Arnold, J., Johnson, L. Tucker, S., Chesak, S., & Dierkhising, R. (2011). Comparison of three simulation-based teaching methodologies for emergency response. *Clinical Simulation in Nursing*, 7(1), e1-e9.
- Banning, M. (2008). The think aloud approach as an educational tool to develop and assess clinical reasoning in undergraduate students. *Nurse Education Today*, 28, p. 8-14.
- Bartels, J. (1998). Developing reflective learners—student self-assessment as learning. *Journal of Professional Nursing*, 14(3), 135.
- Berkow, S., Virkstis, K., Stewart, J. & Conway, L. (2008). Assessing new graduate performance. *Nurse Educator*, 34(1), 17-22.
- Brookfield, S. (2006). *The skillful teacher: On technique, trust, and responsiveness in the classroom* (2nd ed.). San Francisco: Jossey-Bass.
- Blum, C., Borglund, S., & Parcels, D. (2010) High-fidelity nursing simulation: Impact on student self-confidence and clinical competence. *International Journal of Nursing Education Scholarship*, 7(1), art. 18.
- Billings, D. & Halstead, J. (2012). *Teaching in nursing: A guide for faculty* (4th ed.). Philadelphia: Saunders.

- CAE Healthcare. (2012). HPS: The gold standard for medical education turns platinum. Retrieved from https://caehealthcare.com/home//images/uploads/brochures/HPS_Brochure.pdf
- Cantrell, M. (2008). The importance of debriefing in clinical simulations. *Clinical Simulation in Nursing*, 4(2), e19-e23.
- Carper, B. (1978). Fundamental ways of knowing in nursing. *Advances in Nursing Science*, 1(1), 13-23.
- Chickering, A. & Gamson, Z. (1987). Seven principles of good practice in undergraduate education. *AAHE Bulletin*, 39(7), 5-10.
- Chinn, P. & Kramer, M. (2008). *Integrated theory and knowledge development in nursing* (7th ed.). St. Louis: Mosby.
- Curl, E., Smith, S. Chisholm, L., Hamilton, J., & McGee, L. (2007). Multidimensional approaches to extending nurse faculty resources without testing faculty's patience. *Journal of Nursing Education*, 46(4), 193-195.
- Decker, S. (2007). Integrating guided reflection into simulated learning experiences. In P. Jeffries (Ed.), *Simulation in nursing education: From conceptualization to evaluation* (pp. 73-85). New York: National League for Nursing.
- Dewey, J. (1938). *Experience & education*. New York: Simon & Schuster.
- Diekelmann, N. (2003). Thinking-in-action journals: From self-evaluation to multiperspectival thinking. *Journal of Nursing Education*, 42(11), 482-484.
- Etheridge, S. (2007). Learning to think like a nurse: Stories from new nurse graduates. *The Journal of Continuing Education in Nursing*, 38(1), 24-30.

- Feingold, C., Calaluce, M., & Kallen, M. (2004). Computerized patient model and simulated clinical experiences: Evaluation with baccalaureate nursing students. *Journal of Nursing Education, 43*(4), 156-163.
- Heath, H. (1998). Reflection and patterns of knowing in nursing. *Journal of Advanced Nursing, 27*, 1054-1059.
- Henneman, E. & Cunningham, H. (2005). Using clinical simulation to teach patient safety in an acute/critical care nursing course. *Nurse Educator, 30*(4), 172-177.
- Idczak, S. (2007). I am a nurse: Nursing students learn the art and science of nursing. *Nursing Education Perspectives, 28*(2), 66-71.
- Ignacio, J. (2012). Evaluation of simulation learning for clinically-experienced nurses. *Singapore Nursing Journal, 39*(1), 19-26.
- Ironside, P. (2003). New pedagogies for teaching thinking: the lived experiences of students and teachers enacting narrative pedagogy. *Journal of Nursing Education, 42*(11), 509-516.
- Jefferies, P., Carter, N., Chambers, K., Childress, R.M., Childs, J.C., Decker, S., . . . Spunt, D. (2007). *Simulation in nursing education: From conceptualization to evaluation*. P. Jefferies, (Ed.). New York: National League for Nursing.
- Jefferies, P., Carter, N., Chambers, K., Childress, R.M., Childs, J.C., Decker, S., . . . Spunt, D. (2012). *Simulation in nursing education: From conceptualization to evaluation*. (2nd Ed.). P. Jefferies, (Ed.). New York: National League for Nursing.
- Johns, C. (1995). Framing learning through reflection within Carper's fundamental ways of knowing in nursing. *Journal of Advanced Nursing, 22*, 226-234.

- Kaplan, B., Abraham, C., & Gary, R. (2012). Effects of participation vs. observation of a simulation experience on testing outcomes: Implications for logistical planning for a school of nursing. *International Journal of Nursing Education Scholarship*, 9(1), art. 14.
- Kardong-Edgren, S., Starkweather, A. & Ward, L. (2008). The integration of simulation into a clinical foundations of nursing course: Student and faculty perspectives. *International Journal of Nursing Education Scholarship*, 5(1), art. 26.
- Kirkpatrick, J., DeWitt-Weaver, D., & Yeager, L. (2005). Strategies for evaluation learning outcomes. In D. Billings & J. Halstead (Eds.), *Teaching in nursing: A guide for faculty* (2nd ed.) (pp. 367-384). Philadelphia: Saunders.
- Lapkin, S., Levett-Jones, T., Bellchambers, H., & Fernandez, R. (2010) Effectiveness of patient simulation manikins in teaching clinical reasoning skills to undergraduate students: A systemic review. *Clinical Simulation in Nursing*, 6(6), e207-e222.
- Lasater, K. (2007a). High-fidelity simulation and the development of clinical judgment: Students' experiences. *Journal of Nursing Education*, 46(6), 269-276.
- Lasater, K. (2007b). Clinical judgment development: Using simulation to create an assessment rubric. *Journal of Nursing Education*, 46(11), 496-503.
- Leighton, K. & Scholl, K. (2009). Simulated codes: Understanding the response of undergraduate nursing students. *Clinical Simulation in Nursing*, 5(5), e187-e194.
- Moreland, S., Lemieux, M., & Myers, A. (2012) End-of-life care and the use of simulation in a baccalaureate nursing program. *International Journal of Nursing Education Scholarship*, 9(1), art. 9.

- National Council of State Boards of Nursing. (2011). *Transition to Practice*. Retrieved from <https://www.ncsbn.org/363.htm>.
- National League of Nursing. Simulation Innovation Resource Center: SIRC Glossary. Retrieved from <http://sirc.nln.org/mod/glossary/view.php?id=183>
- Neumar, R., Otto, C., Link, M., Kronick, S., Shuster, M., Callaway, C., . . . Morrison, L. (2010). Part 8: Adult Advanced Cardiovascular Life Support: 2010 American Heart Association Guidelines for Cardiopulmonary Resuscitation and Emergency Cardiovascular Care. *Circulation*, 2 November 2010, 122, S729- S767.
- Nielsen, A., Stragnell, S., & Jester, P. (2007). Guide for reflection using the clinical judgment model. *Journal of Nursing Education*, 46(11), 513-516.
- Oblinger, D. (2003). Boomers, Gen Xers, Millennials: Understanding the new students. *EDUCAUSE Review*, 38(4), 37-47.
- Parker, B & Myrick, F. (2010). Transformative learning as a context for human patient simulation. *Journal of Nursing Education*, 49(6), 326-332.
- Reilly, D. & Oermann, M. (1990). *Behavioral objectives: Evaluation in nursing* (3rd ed.). New York: National League for Nursing.
- Rutherford-Hemming, T. (2012). Simulation methodology in nursing education and adult learning theory. *Adult Learning*, 23(3), 129-137.
- Seropian, M., Brown, K., Gavilanes, J., & Driggers, B. (2004). Simulation: Not just a manikin. *Journal of Nursing Education*, 43(4), 164-169.
- Sharpnack, P. & Madigan, E. (2012). Using low-fidelity simulation with sophomore nursing students in a baccalaureate nursing program. *Nursing Education Perspectives*, 33(4), 264-268.

- Smith, K., Witt, J., Klaassen, J., Zimmerman, C. & Cheng, A. (2012). High-fidelity simulation and legal/ethical concepts: A transformational learning experience. *Nursing Ethics, 19*(3), 390-398.
- Staib, S. (2003). Teaching and measuring critical thinking. *Journal of Nursing Education, 42*(11), 498-508.
- Tanner, C. (2006). Thinking like a nurse: A research-based model of clinical judgment in nursing. *Journal of Nursing Education, 45*(6), 204-211.
- Young, L. & Paterson, B. (2007). *Teaching nursing: Developing a student-centered learning environment*. Philadelphia: Lippincott Williams & Wilkins.

APPENDIX A. PERMISSION FOR USE OF FRAMEWORK

May 9, 2011

Shelley Graening
North Dakota State University
sgraening@live.com








Dear Ms. Graening:

Thank you for your email requesting permission to use the Simulation Framework as a framework for your thesis at North Dakota State University. I am pleased to give you permission for the following:

“The Nursing Education Simulation Framework,” developed as part of the 2003-2006 NLN/Laerdal Simulation Study and most recently revised and published on page 23 in the work noted below, may be used within your thesis.

Jeffries, P.R. (2007). Simulation in nursing education: From conceptualization to evaluation. New York: National League for Nursing.

In granting permission to use this Framework, it is understood that the following assumptions operate and “caveats” will be respected:

-  The Framework will be used only for the purpose outlined above.
-  The Framework will be included in its entirety and not modified in any way.
-  The report of your research will acknowledge that the Framework has been included with the permission of the National League for Nursing, New York, NY.
-  The National League for Nursing is the sole owner of these rights being granted.
-  No fees are being charged for this permission.

I am pleased that material published by the National League for Nursing is seen as valuable to your research, and I am pleased that we are able to grant permission for its use. Should you have any questions, please feel free to contact me directly.

Respectfully,

Linda Christensen
Chief Administrative Officer
National League for Nursing
lchristensen@nlm.org

APPENDIX B. FACILITATOR'S TOOL FOR GUIDED REFLECTION SESSIONS

The following cue questions ask about various patterns of knowing during a simulation experience. Please utilize these as a guide to conduct the debriefing session.

Empirical:

Describe the knowledge, skills, and experiences you have that helped you provide patient care during this simulated experience.

Aesthetic:

Describe the problem your patient was having.
What was your main goal during this simulation?

Personal:

Describe what influenced your actions during the scenario.
Describe how this experience made you feel.
Describe how satisfied you are with the actions you initiated during this scenario.

Ethical:

Describe how your personal values and beliefs influenced your actions during this experience.

Reflection:

Describe how you knew what to do during this situation.
What would you do differently if we went back into the patient's room and repeated the scenario right now?
Discuss how you will use what was learned in this experience in the future?

Source: Decker, S. (2007) Integrating guided reflection into simulated learning experiences In *Simulation in Nursing Education: From Conceptualization to Evaluation*. (Jeffries, P., Ed.), New York: National League for Nursing.

APPENDIX C. IRB APPROVAL FORM

NDSU

NORTH DAKOTA STATE UNIVERSITY

Institutional Review Board

*Office of the Vice President for Research, Creative Activities and Technology Transfer
NDSU Dept. 4000
1735 NDSU Research Park Drive
Research 1, P.O. Box 6050
Fargo, ND 58108-6050*

701.231.8995
Fax 701.231.8098

Federalwide Assurance #FWA00002439
Expires April 24, 2011

February 26, 2010

Dr. Loretta Heuer and Dr. Norma Kiser-Larson
Dept. of Nursing
Sudro Hall

Re: IRB Certification of Human Research Project:

**“The Impact of Incorporating Formal Debriefing During Simulation Experiences”
Protocol #PH10187**

Co-investigator(s) and research team: **Shelly Graening, Margaret Lee, Carla Gross**

Study site(s): **NDSU** Funding: **n/a**

It has been determined that this human subjects research project qualifies for exempt status (category # 1, 2) in accordance with federal regulations (Code of Federal Regulations, Title 45, Part 46, *Protection of Human Subjects*). This determination is based on the protocol form received 2/18/2010 and consent/information sheet received 2/23/2010.

Please also note the following:

- This determination of exemption expires 3 years from this date. If you wish to continue the research after 2/25/2013, submit a new protocol several weeks prior to this date.
- The project must be conducted as described in the approved protocol. If you wish to make changes, pre-approval is to be obtained from the IRB, unless the changes are necessary to eliminate an apparent immediate hazard to subjects. A *Protocol Amendment Request Form* is available on the IRB website.
- Prompt, written notification must be made to the IRB of any adverse events, complaints, or unanticipated problems involving risks to subjects or others related to this project.
- Any significant new findings that may affect the risks and benefits to participation will be reported in writing to the participants and the IRB.
- Research records may be subject to a random or directed audit at any time to verify compliance with IRB policies.

Thank you for complying with NDSU IRB procedures; best wishes for success with your project.

Sincerely,



Kristy Shirley, CIP
Research Compliance Administrator

NDSU is an equal opportunity institution.

APPENDIX D. CONSENT FORM

**North Dakota State University
College of Pharmacy, Nursing and Allied Sciences
Nursing Department
Sudro Hall, Room 136
Fargo, ND 58108
(701)231-7395**

CONSENT FORM

Dear Student:

My name is Shelly Graening. I am a graduate student in the Nursing Department at North Dakota State University. I am conducting a research study to examine the impact of adding formal debriefing to simulation experiences. Results of this study will help us learn more about student satisfaction and self-confidence during simulation experiences.

You are invited to participate in this research study. Your participation is entirely voluntary, and you may withdraw from participation at any time. If you decide to complete this survey, tear off this sheet and keep it for your information. When you turn in your completed questionnaire, you will be able to take a number that will place you in a drawing for a \$25 Starbucks card. The winning number will be drawn in your core class after simulations have been completed. If you decide not to participate in the study, it will in no way reflect on your grade for the simulation experience or nursing course.

It should take approximately 5-10 minutes to complete the attached questionnaire. Instructions are found at the beginning of the questionnaire.

Your identity will not be revealed as the study is anonymous. Results of this study will be compiled as a group, not individually.

If you have any questions about this project, please call me at (701) 799-2217 or contact me via e-mail at shelly.graening@ndsu.edu, or call my advisers, Dr. Loretta Heuer at (701)231- 7772 or Dr. Norma Kiser-Larson at (701) 231-7775. You may also contact either via e-mail at loretta.heuer@ndsu.edu or norma.kiser-larson@ndsu.edu. If you have questions about the rights of human participants in research, or to report a problem, you should contact the NDSU IRB office at (701) 231-8995.

Thank you for your participation in this study. If you wish to receive a copy of the research results, please contact me via e-mail at shelly.graening@ndsu.edu.

APPENDIX E. PERMISSION FOR USE OF QUESTIONNAIRE

January 20, 2009











Shelly Rae Graening, BSN, RN
1433 Sheyenne Park Court
West Fargo, ND 58078



Dear Ms. Graening,

Thank you for your email requesting permission to use one of our three instruments developed for the NLN/Laerdal Simulation study. It is my pleasure to grant you permission to use the “Student Satisfaction and Self-Confidence in Learning” to measure satisfaction and self-confidence of the students at North Dakota State University College of Pharmacy, Nursing and Allied Sciences.

In granting permission to use the instrument noted above, it is understood that the following assumptions operate and “caveats” will be respected:

-   These instruments will be used strictly for the purposes noted above.
-   The instrument will not be edited in any way.
-   The National League for Nursing is the sole owner of these rights being granted and must be acknowledged as the source of this item.
-   You own a copy of Simulation in Nursing Education: From Conceptualization to Evaluation, and are familiar with the three-year multi-site project for which this instrument was developed.
-   Your membership in the NLN entitles you to use of these instruments at no charge.

I am pleased that material developed by the National League for Nursing is seen as valuable as you evaluate ways to enhance learning and I am pleased that we are able to grant permission for use of the “Student Satisfaction and Self-Confidence in Learning,” instrument. Should you have any questions, please feel free to contact me at mrizzolo@nlm.org. Thank you.

Best,

Mary Anne Rizzolo, EdD, FAAN
Senior Program Director, Professional Development
National League for Nursing
61 Broadway, 33rd Floor
New York, NY 10006
Phone: 212.812.0315 | Fax: 212.812.0391
Email: mrizzolo@nlm.org

APPENDIX F. STUDENT SATISFACTION AND SELF-CONFIDENCE IN LEARNING QUESTIONNAIRE

Learner Satisfaction and Self- Confidence in Learning

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

Mark:

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

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

APPENDIX G. DEMOGRAPHIC INFORMATION

Instructions: Please answer the following questions. This is anonymous with the results being compiled as a group, not individually.

14. What is your age?
 - a. 18-21
 - b. 22-25
 - c. 26-30
 - d. 30+

15. What is your sex?
 - a. male
 - b. female

16. Do you have any prior health care experience?
 - a. none
 - b. less than 1 year
 - c. 1-2 years
 - d. greater than 2 years

17. What role did you play in this simulation?
 - a. direct care nurse
 - b. medication nurse
 - c. charge nurse
 - d. compression/treatment nurse

18. How many simulations have you participated in previously?
 - a. 0-1
 - b. 2-3
 - c. 3-4
 - d. greater than 4